

SEQLIST-20480.TXT

Ser Leu Pro Val<sub>20</sub> Leu Gln Val Arg Asp<sub>25</sub> Val Leu Val Arg Gly<sub>30</sub> Phe Gly  
 Asp Ser Val<sub>35</sub> Glu Glu Ala Leu Ser<sub>40</sub> Glu Ala Arg Glu His<sub>45</sub> Leu Lys Asn  
 Gly Thr<sub>50</sub> Cys Gly Leu Val Glu<sub>55</sub> Leu Glu Lys Gly Val<sub>60</sub> Leu Pro Gln Leu  
 Glu Gln Pro Tyr Val Phe<sub>70</sub> Ile Lys Arg Ser Asp<sub>75</sub> Ala Leu Ser Thr Asn<sub>80</sub>  
 His Gly His Lys Val<sub>85</sub> Val Glu Leu Val Ala<sub>90</sub> Glu Met Asp Gly Ile<sub>95</sub> Gln  
 Tyr Gly Arg Ser<sub>100</sub> Gly Ile Thr Leu Gly<sub>105</sub> Val Leu Val Pro His<sub>110</sub> Val Gly  
 Glu Thr Pro<sub>115</sub> Ile Ala Tyr Arg Asn<sub>120</sub> Val Leu Leu Arg Lys<sub>125</sub> Asn Gly Asn  
 Lys Gly<sub>130</sub> Ala Gly Gly His Ser<sub>135</sub> Tyr Gly Ile Asp Leu<sub>140</sub> Lys Ser Tyr Asp  
 Leu Gly<sub>145</sub> Asp Glu Leu Gly<sub>150</sub> Thr Asp Pro Ile Glu<sub>155</sub> Asp Tyr Glu Gln Asn<sub>160</sub>  
 Trp Asn Thr Lys His<sub>165</sub> Gly Ser Gly Ala Leu<sub>170</sub> Arg Glu Leu Thr Arg<sub>175</sub> Glu  
 Leu Asn Gly Gly<sub>180</sub> Ala Val Thr Arg Tyr<sub>185</sub> Val Asp Asn Asn Phe<sub>190</sub> Cys Gly  
 Pro Asp Gly<sub>195</sub> Tyr Pro Leu Asp Cys<sub>200</sub> Ile Lys Asp Phe Leu<sub>205</sub> Ala Arg Ala  
 Gly Lys<sub>210</sub> Ser Met Cys Thr Leu<sub>215</sub> Ser Glu Gln Leu Asp<sub>220</sub> Tyr Ile Glu Ser  
 Lys Arg Gly Val Tyr Cys<sub>230</sub> Cys Arg Asp His Glu<sub>235</sub> His Glu Ile Ala Trp<sub>240</sub>  
 Phe Thr Glu Arg Ser<sub>245</sub> Asp Lys Ser Tyr Glu<sub>250</sub> His Gln Thr Pro Phe<sub>255</sub> Glu  
 Ile Lys Ser Ala<sub>260</sub> Lys Lys Phe Asp Thr<sub>265</sub> Phe Lys Gly Glu Cys<sub>270</sub> Pro Lys  
 Phe Val Phe<sub>275</sub> Pro Leu Asn Ser Lys<sub>280</sub> Val Lys Val Ile Gln<sub>285</sub> Pro Arg Val  
 Glu Lys<sub>290</sub> Lys Lys Thr Glu Gly<sub>295</sub> Phe Met Gly Arg Ile<sub>300</sub> Arg Ser Val Tyr  
 Pro Val Ala Ser Pro Gln<sub>310</sub> Glu Cys Asn Asn Met<sub>315</sub> His Leu Ser Thr Leu<sub>320</sub>  
 Met Lys Cys Asn His<sub>325</sub> Cys Asp Glu Val Ser<sub>330</sub> Trp Gln Thr Cys Asp<sub>335</sub> Phe  
 Leu Lys Ala Thr<sub>340</sub> Cys Glu His Cys Gly<sub>345</sub> Thr Glu Asn Leu Val<sub>350</sub> Ile Glu

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Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met  
355 360 365

Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val  
370 375 380

Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly  
385 390 395 400

Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys  
405 410 415

Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly  
420 425 430

Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu  
435 440 445

Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val  
450 455 460

Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe  
465 470 475 480

Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr  
485 490 495

Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr  
500 505 510

Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser  
515 520 525

Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala Ala Gly Val Ile  
530 535 540

Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pro  
545 550 555 560

Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln  
565 570 575

Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser Asp Leu Leu Thr  
580 585 590

Asn Ser Val Ile Ile Met Ala Tyr Val Thr Gly Gly Leu Val Gln Gln  
595 600 605

Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr Val Glu Lys Leu  
610 615 620

Arg Pro Ile Phe Glu Trp Ile Glu Ala Lys Leu Ser Ala Gly Val Glu  
625 630 635 640

Phe Leu Lys Asp Ala Trp Glu Ile Leu Lys Phe Leu Ile Thr Gly Val  
645 650 655

Phe Asp Ile Val Lys Gly Gln Ile Gln Val Ala Ser Asp Asn Ile Lys  
660 665 670

Asp Cys Val Lys Cys Phe Ile Asp Val Val Asn Lys Ala Leu Glu Met  
675 680 685



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Cys Ile Asp Gln Val Thr Ile Ala Gly Ala Lys Leu Arg Ser Leu Asn  
 690 695 700  
 Leu Gly Glu Val Phe Ile Ala Gln Ser Lys Gly Leu Tyr Arg Gln Cys  
 705 710 715 720  
 Ile Arg Gly Lys Glu Gln Leu Gln Leu Leu Met Pro Leu Lys Ala Pro  
 725 730 735  
 Lys Glu Val Thr Phe Leu Glu Gly Asp Ser His Asp Thr Val Leu Thr  
 740 745 750  
 Ser Glu Glu Val Val Leu Lys Asn Gly Glu Leu Glu Ala Leu Glu Thr  
 755 760 765  
 Pro Val Asp Ser Phe Thr Asn Gly Ala Ile Val Gly Thr Pro Val Cys  
 770 775 780  
 Val Asn Gly Leu Met Leu Leu Glu Ile Lys Asp Lys Glu Gln Tyr Cys  
 785 790 795 800  
 Ala Leu Ser Pro Gly Leu Leu Ala Thr Asn Asn Val Phe Arg Leu Lys  
 805 810 815  
 Gly Gly Ala Pro Ile Lys Gly Val Thr Phe Gly Glu Asp Thr Val Trp  
 820 825 830  
 Glu Val Gln Gly Tyr Lys Asn Val Arg Ile Thr Phe Glu Leu Asp Glu  
 835 840 845  
 Arg Val Asp Lys Val Leu Asn Glu Lys Cys Ser Val Tyr Thr Val Glu  
 850 855 860  
 Ser Gly Thr Glu Val Thr Glu Phe Ala Cys Val Val Ala Glu Ala Val  
 865 870 875 880  
 Val Lys Thr Leu Gln Pro Val Ser Asp Leu Leu Thr Asn Met Gly Ile  
 885 890 895  
 Asp Leu Asp Glu Trp Ser Val Ala Thr Phe Tyr Leu Phe Asp Asp Ala  
 900 905 910  
 Gly Glu Glu Asn Phe Ser Ser Arg Met Tyr Cys Ser Phe Tyr Pro Pro  
 915 920 925  
 Asp Glu Glu Glu Glu Asp Asp Ala Glu Cys Glu Glu Glu Glu Ile Asp  
 930 935 940  
 Glu Thr Cys Glu His Glu Tyr Gly Thr Glu Asp Asp Tyr Gln Gly Leu  
 945 950 955 960  
 Pro Leu Glu Phe Gly Ala Ser Ala Glu Thr Val Arg Val Glu Glu Glu  
 965 970 975  
 Glu Glu Glu Asp Trp Leu Asp Asp Thr Thr Glu Gln Ser Glu Ile Glu  
 980 985 990  
 Pro Glu Pro Glu Pro Thr Pro Glu Glu Pro Val Asn Gln Phe Thr Gly  
 995 1000 1005  
 Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Ile Val  
 1010 1015 1020

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Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala Ala Asn  
 1025 1030 1035 1040  
 Ile His Leu Lys His Gly Gly Gly Val Ala Gly Ala Leu Asn Lys Ala  
 1045 1050 1055  
 Thr Asn Gly Ala Met Gln Lys Glu Ser Asp Asp Tyr Ile Lys Leu Asn  
 1060 1065 1070  
 Gly Pro Leu Thr Val Gly Gly Ser Cys Leu Leu Ser Gly His Asn Leu  
 1075 1080 1085  
 Ala Lys Lys Cys Leu His Val Val Gly Pro Asn Leu Asn Ala Gly Glu  
 1090 1095 1100  
 Asp Ile Gln Leu Leu Lys Ala Ala Tyr Glu Asn Phe Asn Ser Gln Asp  
 1105 1110 1115 1120  
 Ile Leu Leu Ala Pro Leu Leu Ser Ala Gly Ile Phe Gly Ala Lys Pro  
 1125 1130 1135  
 Leu Gln Ser Leu Gln Val Cys Val Gln Thr Val Arg Thr Gln Val Tyr  
 1140 1145 1150  
 Ile Ala Val Asn Asp Lys Ala Leu Tyr Glu Gln Val Val Met Asp Tyr  
 1155 1160 1165  
 Leu Asp Asn Leu Lys Pro Arg Val Glu Ala Pro Lys Gln Glu Glu Pro  
 1170 1175 1180  
 Pro Asn Thr Glu Asp Ser Lys Thr Glu Glu Lys Ser Val Val Gln Lys  
 1185 1190 1195 1200  
 Pro Val Asp Val Lys Pro Lys Ile Lys Ala Cys Ile Asp Glu Val Thr  
 1205 1210 1215  
 Thr Thr Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys Leu Leu Leu Phe  
 1220 1225 1230  
 Ala Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln Asn Met Leu Arg  
 1235 1240 1245  
 Gly Glu Asp Met Ser Phe Leu Glu Lys Asp Ala Pro Tyr Met Val Gly  
 1250 1255 1260  
 Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val Ile Pro Ser Lys  
 1265 1270 1275 1280  
 Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala Leu Lys Lys Val  
 1285 1290 1295  
 Pro Val Asp Glu Tyr Ile Thr Thr Tyr Pro Gly Gln Gly Cys Ala Gly  
 1300 1305 1310  
 Tyr Thr Leu Glu Glu Ala Lys Thr Ala Leu Lys Lys Cys Lys Ser Ala  
 1315 1320 1325  
 Phe Tyr Val Leu Pro Ser Glu Ala Pro Asn Ala Lys Glu Glu Ile Leu  
 1330 1335 1340  
 Gly Thr Val Ser Trp Asn Leu Arg Glu Met Leu Ala His Ala Glu Glu  
 1345 1350 1355 1360

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Thr Arg Lys Leu Met Pro Ile Cys Met Asp Val Arg Ala Ile Met Ala  
1365 1370 1375

Thr Ile Gln Arg Lys Tyr Lys Gly Ile Lys Ile Gln Glu Gly Ile Val  
1380 1385 1390

Asp Tyr Gly Val Arg Phe Phe Phe Tyr Thr Ser Lys Glu Pro Val Ala  
1395 1400 1405

Ser Ile Ile Thr Lys Leu Asn Ser Leu Asn Glu Pro Leu Val Thr Met  
1410 1415 1420

Pro Ile Gly Tyr Val Thr His Gly Phe Asn Leu Glu Glu Ala Ala Arg  
1425 1430 1435 1440

Cys Met Arg Ser Leu Lys Ala Pro Ala Val Val Ser Val Ser Ser Pro  
1445 1450 1455

Asp Ala Val Thr Thr Tyr Asn Gly Tyr Leu Thr Ser Ser Ser Lys Thr  
1460 1465 1470

Ser Glu Glu His Phe Val Glu Thr Val Ser Leu Ala Gly Ser Tyr Arg  
1475 1480 1485

Asp Trp Ser Tyr Ser Gly Gln Arg Thr Glu Leu Gly Val Glu Phe Leu  
1490 1495 1500

Lys Arg Gly Asp Lys Ile Val Tyr His Thr Leu Glu Ser Pro Val Glu  
1505 1510 1515 1520

Phe His Leu Asp Gly Glu Val Leu Ser Leu Asp Lys Leu Lys Ser Leu  
1525 1530 1535

Leu Ser Leu Arg Glu Val Lys Thr Ile Lys Val Phe Thr Thr Val Asp  
1540 1545 1550

Asn Thr Asn Leu His Thr Gln Leu Val Asp Met Ser Met Thr Tyr Gly  
1555 1560 1565

Gln Gln Phe Gly Pro Thr Tyr Leu Asp Gly Ala Asp Val Thr Lys Ile  
1570 1575 1580

Lys Pro His Val Asn His Glu Gly Lys Thr Phe Phe Val Leu Pro Ser  
1585 1590 1595 1600

Asp Asp Thr Leu Arg Ser Glu Ala Phe Glu Tyr Tyr His Thr Leu Asp  
1605 1610 1615

Glu Ser Phe Leu Gly Arg Tyr Met Ser Ala Leu Asn His Thr Lys Lys  
1620 1625 1630

Trp Lys Phe Pro Gln Val Gly Gly Leu Thr Ser Ile Lys Trp Ala Asp  
1635 1640 1645

Asn Asn Cys Tyr Leu Ser Ser Val Leu Leu Ala Leu Gln Gln Leu Glu  
1650 1655 1660

Val Lys Phe Asn Ala Pro Ala Leu Gln Glu Ala Tyr Tyr Arg Ala Arg  
1665 1670 1675 1680

Ala Gly Asp Ala Ala Asn Phe Cys Ala Leu Ile Leu Ala Tyr Ser Asn  
1685 1690 1695

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Lys Thr Val Gly Glu Leu Gly Asp Val Arg Glu Thr Met Thr His Leu  
1700 1705 1710

Leu Gln His Ala Asn Leu Glu Ser Ala Lys Arg Val Leu Asn Val Val  
1715 1720 1725

Cys Lys His Cys Gly Gln Lys Thr Thr Thr Leu Thr Gly Val Glu Ala  
1730 1735 1740

Val Met Tyr Met Gly Thr Leu Ser Tyr Asp Asn Leu Lys Thr Gly Val  
1745 1750 1755 1760

Ser Ile Pro Cys Val Cys Gly Arg Asp Ala Thr Gln Tyr Leu Val Gln  
1765 1770 1775

Gln Glu Ser Ser Phe Val Met Met Ser Ala Pro Pro Ala Glu Tyr Lys  
1780 1785 1790

Leu Gln Gln Gly Thr Phe Leu Cys Ala Asn Glu Tyr Thr Gly Asn Tyr  
1795 1800 1805

Gln Cys Gly His Tyr Thr His Ile Thr Ala Lys Glu Thr Leu Tyr Arg  
1810 1815 1820

Ile Asp Gly Ala His Leu Thr Lys Met Ser Glu Tyr Lys Gly Pro Val  
1825 1830 1835 1840

Thr Asp Val Phe Tyr Lys Glu Thr Ser Tyr Thr Thr Thr Ile Lys Pro  
1845 1850 1855

Val Ser Tyr Lys Leu Asp Gly Val Thr Tyr Thr Glu Ile Glu Pro Lys  
1860 1865 1870

Leu Asp Gly Tyr Tyr Lys Lys Asp Asn Ala Tyr Tyr Thr Glu Gln Pro  
1875 1880 1885

Ile Asp Leu Val Pro Thr Gln Pro Leu Pro Asn Ala Ser Phe Asp Asn  
1890 1895 1900

Phe Lys Leu Thr Cys Ser Asn Thr Lys Phe Ala Asp Asp Leu Asn Gln  
1905 1910 1915 1920

Met Thr Gly Phe Thr Lys Pro Ala Ser Arg Glu Leu Ser Val Thr Phe  
1925 1930 1935

Phe Pro Asp Leu Asn Gly Asp Val Val Ala Ile Asp Tyr Arg His Tyr  
1940 1945 1950

Ser Ala Ser Phe Lys Lys Gly Ala Lys Leu Leu His Lys Pro Ile Val  
1955 1960 1965

Trp His Ile Asn Gln Ala Thr Thr Lys Thr Thr Phe Lys Pro Asn Thr  
1970 1975 1980

Trp Cys Leu Arg Cys Leu Trp Ser Thr Lys Pro Val Asp Thr Ser Asn  
1985 1990 1995 2000

Ser Phe Glu Val Leu Ala Val Glu Asp Thr Gln Gly Met Asp Asn Leu  
2005 2010 2015

Ala Cys Glu Ser Gln Gln Pro Thr Ser Glu Glu Val Val Glu Asn Pro  
2020 2025 2030

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Thr Ile Gln Lys Glu Val Ile Glu Cys Asp Val Lys Thr Thr Glu Val  
2035 2040 2045

Val Gly Asn Val Ile Leu Lys Pro Ser Asp Glu Gly Val Lys Val Thr  
2050 2055 2060

Gln Glu Leu Gly His Glu Asp Leu Met Ala Ala Tyr Val Glu Asn Thr  
2065 2070 2075 2080

Ser Ile Thr Ile Lys Lys Pro Asn Glu Leu Ser Leu Ala Leu Gly Leu  
2085 2090 2095

Lys Thr Ile Ala Thr His Gly Ile Ala Ala Ile Asn Ser Val Pro Trp  
2100 2105 2110

Ser Lys Ile Leu Ala Tyr Val Lys Pro Phe Leu Gly Gln Ala Ala Ile  
2115 2120 2125

Thr Thr Ser Asn Cys Ala Lys Arg Leu Ala Gln Arg Val Phe Asn Asn  
2130 2135 2140

Tyr Met Pro Tyr Val Phe Thr Leu Leu Phe Gln Leu Cys Thr Phe Thr  
2145 2150 2155 2160

Lys Ser Thr Asn Ser Arg Ile Arg Ala Ser Leu Pro Thr Thr Ile Ala  
2165 2170 2175

Lys Asn Ser Val Lys Ser Val Ala Lys Leu Cys Leu Asp Ala Gly Ile  
2180 2185 2190

Asn Tyr Val Lys Ser Pro Lys Phe Ser Lys Leu Phe Thr Ile Ala Met  
2195 2200 2205

Trp Leu Leu Leu Leu Ser Ile Cys Leu Gly Ser Leu Ile Cys Val Thr  
2210 2215 2220

Ala Ala Phe Gly Val Leu Leu Ser Asn Phe Gly Ala Pro Ser Tyr Cys  
2225 2230 2235 2240

Asn Gly Val Arg Glu Leu Tyr Leu Asn Ser Ser Asn Val Thr Thr Met  
2245 2250 2255

Asp Phe Cys Glu Gly Ser Phe Pro Cys Ser Ile Cys Leu Ser Gly Leu  
2260 2265 2270

Asp Ser Leu Asp Ser Tyr Pro Ala Leu Glu Thr Ile Gln Val Thr Ile  
2275 2280 2285

Ser Ser Tyr Lys Leu Asp Leu Thr Ile Leu Gly Leu Ala Ala Glu Trp  
2290 2295 2300

Val Leu Ala Tyr Met Leu Phe Thr Lys Phe Phe Tyr Leu Leu Gly Leu  
2305 2310 2315 2320

Ser Ala Ile Met Gln Val Phe Phe Gly Tyr Phe Ala Ser His Phe Ile  
2325 2330 2335

Ser Asn Ser Trp Leu Met Trp Phe Ile Ile Ser Ile Val Gln Met Ala  
2340 2345 2350

Pro Val Ser Ala Met Val Arg Met Tyr Ile Phe Phe Ala Ser Phe Tyr  
2355 2360 2365

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Tyr Ile Trp Lys Ser Tyr Val His Ile Met Asp Gly Cys Thr Ser Ser  
 2370 2375 2380  
 Thr Cys Met Met Cys Tyr Lys Arg Asn Arg Ala Thr Arg Val Glu Cys  
 2385 2390 2395 2400  
 Thr Thr Ile Val Asn Gly Met Lys Arg Ser Phe Tyr Val Tyr Ala Asn  
 2405 2410 2415  
 Gly Gly Arg Gly Phe Cys Lys Thr His Asn Trp Asn Cys Leu Asn Cys  
 2420 2425 2430  
 Asp Thr Phe Cys Thr Gly Ser Thr Phe Ile Ser Asp Glu Val Ala Arg  
 2435 2440 2445  
 Asp Leu Ser Leu Gln Phe Lys Arg Pro Ile Asn Pro Thr Asp Gln Ser  
 2450 2455 2460  
 Ser Tyr Ile Val Asp Ser Val Ala Val Lys Asn Gly Ala Leu His Leu  
 2465 2470 2475 2480  
 Tyr Phe Asp Lys Ala Gly Gln Lys Thr Tyr Glu Arg His Pro Leu Ser  
 2485 2490 2495  
 His Phe Val Asn Leu Asp Asn Leu Arg Ala Asn Asn Thr Lys Gly Ser  
 2500 2505 2510  
 Leu Pro Ile Asn Val Ile Val Phe Asp Gly Lys Ser Lys Cys Asp Glu  
 2515 2520 2525  
 Ser Ala Ser Lys Ser Ala Ser Val Tyr Tyr Ser Gln Leu Met Cys Gln  
 2530 2535 2540  
 Pro Ile Leu Leu Leu Asp Gln Ala Leu Val Ser Asp Val Gly Asp Ser  
 2545 2550 2555 2560  
 Thr Glu Val Ser Val Lys Met Phe Asp Ala Tyr Val Asp Thr Phe Ser  
 2565 2570 2575  
 Ala Thr Phe Ser Val Pro Met Glu Lys Leu Lys Ala Leu Val Ala Thr  
 2580 2585 2590  
 Ala His Ser Glu Leu Ala Lys Gly Val Ala Leu Asp Gly Val Leu Ser  
 2595 2600 2605  
 Thr Phe Val Ser Ala Ala Arg Gln Gly Val Val Asp Thr Asp Val Asp  
 2610 2615 2620  
 Thr Lys Asp Val Ile Glu Cys Leu Lys Leu Ser His His Ser Asp Leu  
 2625 2630 2635 2640  
 Glu Val Thr Gly Asp Ser Cys Asn Asn Phe Met Leu Thr Tyr Asn Lys  
 2645 2650 2655  
 Val Glu Asn Met Thr Pro Arg Asp Leu Gly Ala Cys Ile Asp Cys Asn  
 2660 2665 2670  
 Ala Arg His Ile Asn Ala Gln Val Ala Lys Ser His Asn Val Ser Leu  
 2675 2680 2685  
 Ile Trp Asn Val Lys Asp Tyr Met Ser Leu Ser Glu Gln Leu Arg Lys  
 2690 2695 2700

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Gln Ile Arg Ser Ala Ala Lys Lys Asn Asn Ile Pro Phe Arg Leu Thr  
2705 2710 2715 2720

Cys Ala Thr Thr Arg Gln Val Val Asn Val Ile Thr Thr Lys Ile Ser  
2725 2730 2735

Leu Lys Gly Gly Lys Ile Val Ser Thr Cys Phe Lys Leu Met Leu Lys  
2740 2745 2750

Ala Thr Leu Leu Cys Val Leu Ala Ala Leu Val Cys Tyr Ile Val Met  
2755 2760 2765

Pro Val His Thr Leu Ser Ile His Asp Gly Tyr Thr Asn Glu Ile Ile  
2770 2775 2780

Gly Tyr Lys Ala Ile Gln Asp Gly Val Thr Arg Asp Ile Ile Ser Thr  
2785 2790 2795 2800

Asp Asp Cys Phe Ala Asn Lys His Ala Gly Phe Asp Ala Trp Phe Ser  
2805 2810 2815

Gln Arg Gly Gly Ser Tyr Lys Asn Asp Lys Ser Cys Pro Val Val Ala  
2820 2825 2830

Ala Ile Ile Thr Arg Glu Ile Gly Phe Ile Val Pro Gly Leu Pro Gly  
2835 2840 2845

Thr Val Leu Arg Ala Ile Asn Gly Asp Phe Leu His Phe Leu Pro Arg  
2850 2855 2860

Val Phe Ser Ala Val Gly Asn Ile Cys Tyr Thr Pro Ser Lys Leu Ile  
2865 2870 2875 2880

Glu Tyr Ser Asp Phe Ala Thr Ser Ala Cys Val Leu Ala Ala Glu Cys  
2885 2890 2895

Thr Ile Phe Lys Asp Ala Met Gly Lys Pro Val Pro Tyr Cys Tyr Asp  
2900 2905 2910

Thr Asn Leu Leu Glu Gly Ser Ile Ser Tyr Ser Glu Leu Arg Pro Asp  
2915 2920 2925

Thr Arg Tyr Val Leu Met Asp Gly Ser Ile Ile Gln Phe Pro Asn Thr  
2930 2935 2940

Tyr Leu Glu Gly Ser Val Arg Val Val Thr Thr Phe Asp Ala Glu Tyr  
2945 2950 2955 2960

Cys Arg His Gly Thr Cys Glu Arg Ser Glu Val Gly Ile Cys Leu Ser  
2965 2970 2975

Thr Ser Gly Arg Trp Val Leu Asn Asn Glu His Tyr Arg Ala Leu Ser  
2980 2985 2990

Gly Val Phe Cys Gly Val Asp Ala Met Asn Leu Ile Ala Asn Ile Phe  
2995 3000 3005

Thr Pro Leu Val Gln Pro Val Gly Ala Leu Asp Val Ser Ala Ser Val  
3010 3015 3020

Val Ala Gly Gly Ile Ile Ala Ile Leu Val Thr Cys Ala Ala Tyr Tyr  
3025 3030 3035 3040

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Phe Met Lys Phe Arg Arg Val Phe Gly Glu Tyr Asn His Val Val Ala  
3045 3050 3055

Ala Asn Ala Leu Leu Phe Leu Met Ser Phe Thr Ile Leu Cys Leu Val  
3060 3065 3070

Pro Ala Tyr Ser Phe Leu Pro Gly Val Tyr Ser Val Phe Tyr Leu Tyr  
3075 3080 3085

Leu Thr Phe Tyr Phe Thr Asn Asp Val Ser Phe Leu Ala His Leu Gln  
3090 3095 3100

Trp Phe Ala Met Phe Ser Pro Ile Val Pro Phe Trp Ile Thr Ala Ile  
3105 3110 3115 3120

Tyr Val Phe Cys Ile Ser Leu Lys His Cys His Trp Phe Phe Asn Asn  
3125 3130 3135

Tyr Leu Arg Lys Arg Val Met Phe Asn Gly Val Thr Phe Ser Thr Phe  
3140 3145 3150

Glu Glu Ala Ala Leu Cys Thr Phe Leu Leu Asn Lys Glu Met Tyr Leu  
3155 3160 3165

Lys Leu Arg Ser Glu Thr Leu Leu Pro Leu Thr Gln Tyr Asn Arg Tyr  
3170 3175 3180

Leu Ala Leu Tyr Asn Lys Tyr Lys Tyr Phe Ser Gly Ala Leu Asp Thr  
3185 3190 3195 3200

Thr Ser Tyr Arg Glu Ala Ala Cys Cys His Leu Ala Lys Ala Leu Asn  
3205 3210 3215

Asp Phe Ser Asn Ser Gly Ala Asp Val Leu Tyr Gln Pro Pro Gln Thr  
3220 3225 3230

Ser Ile Thr Ser Ala Val Leu Gln Ser Gly Phe Arg Lys Met Ala Phe  
3235 3240 3245

Pro Ser Gly Lys Val Glu Gly Cys Met Val Gln Val Thr Cys Gly Thr  
3250 3255 3260

Thr Thr Leu Asn Gly Leu Trp Leu Asp Asp Thr Val Tyr Cys Pro Arg  
3265 3270 3275 3280

His Val Ile Cys Thr Ala Glu Asp Met Leu Asn Pro Asn Tyr Glu Asp  
3285 3290 3295

Leu Leu Ile Arg Lys Ser Asn His Ser Phe Leu Val Gln Ala Gly Asn  
3300 3305 3310

Val Gln Leu Arg Val Ile Gly His Ser Met Gln Asn Cys Leu Leu Arg  
3315 3320 3325

Leu Lys Val Asp Thr Ser Asn Pro Lys Thr Pro Lys Tyr Lys Phe Val  
3330 3335 3340

Arg Ile Gln Pro Gly Gln Thr Phe Ser Val Leu Ala Cys Tyr Asn Gly  
3345 3350 3355 3360

Ser Pro Ser Gly Val Tyr Gln Cys Ala Met Arg Pro Asn His Thr Ile  
3365 3370 3375



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Lys Gly Ser Phe Leu Asn Gly Ser Cys Gly Ser Val Gly Phe Asn Ile  
3380 3385 3390

Asp Tyr Asp Cys Val Ser Phe Cys Tyr Met His His Met Glu Leu Pro  
3395 3400 3405

Thr Gly Val His Ala Gly Thr Asp Leu Glu Gly Lys Phe Tyr Gly Pro  
3410 3415 3420

Phe Val Asp Arg Gln Thr Ala Gln Ala Ala Gly Thr Asp Thr Thr Ile  
3425 3430 3435 3440

Thr Leu Asn Val Leu Ala Trp Leu Tyr Ala Ala Val Ile Asn Gly Asp  
3445 3450 3455

Arg Trp Phe Leu Asn Arg Phe Thr Thr Thr Leu Asn Asp Phe Asn Leu  
3460 3465 3470

Val Ala Met Lys Tyr Asn Tyr Glu Pro Leu Thr Gln Asp His Val Asp  
3475 3480 3485

Ile Leu Gly Pro Leu Ser Ala Gln Thr Gly Ile Ala Val Leu Asp Met  
3490 3495 3500

Cys Ala Ala Leu Lys Glu Leu Leu Gln Asn Gly Met Asn Gly Arg Thr  
3505 3510 3515 3520

Ile Leu Gly Ser Thr Ile Leu Glu Asp Glu Phe Thr Pro Phe Asp Val  
3525 3530 3535

Val Arg Gln Cys Ser Gly Val Thr Phe Gln Gly Lys Phe Lys Lys Ile  
3540 3545 3550

Val Lys Gly Thr His His Trp Met Leu Leu Thr Phe Leu Thr Ser Leu  
3555 3560 3565

Leu Ile Leu Val Gln Ser Thr Gln Trp Ser Leu Phe Phe Phe Val Tyr  
3570 3575 3580

Glu Asn Ala Phe Leu Pro Phe Thr Leu Gly Ile Met Ala Ile Ala Ala  
3585 3590 3595 3600

Cys Ala Met Leu Leu Val Lys His Lys His Ala Phe Leu Cys Leu Phe  
3605 3610 3615

Leu Leu Pro Ser Leu Ala Thr Val Ala Tyr Phe Asn Met Val Tyr Met  
3620 3625 3630

Pro Ala Ser Trp Val Met Arg Ile Met Thr Trp Leu Glu Leu Ala Asp  
3635 3640 3645

Thr Ser Leu Ser Gly Tyr Arg Leu Lys Asp Cys Val Met Tyr Ala Ser  
3650 3655 3660

Ala Leu Val Leu Leu Ile Leu Met Thr Ala Arg Thr Val Tyr Asp Asp  
3665 3670 3675 3680

Ala Ala Arg Arg Val Trp Thr Leu Met Asn Val Ile Thr Leu Val Tyr  
3685 3690 3695

Lys Val Tyr Tyr Gly Asn Ala Leu Asp Gln Ala Ile Ser Met Trp Ala  
3700 3705 3710

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Leu Val Ile Ser Val Thr Ser Asn Tyr Ser Gly Val Val Thr Thr Ile  
3715 3720 3725

Met Phe Leu Ala Arg Ala Ile Val Phe Val Cys Val Glu Tyr Tyr Pro  
3730 3735 3740

Leu Leu Phe Ile Thr Gly Asn Thr Leu Gln Cys Ile Met Leu Val Tyr  
3745 3750 3755 3760

Cys Phe Leu Gly Tyr Cys Cys Cys Cys Tyr Phe Gly Leu Phe Cys Leu  
3765 3770 3775

Leu Asn Arg Tyr Phe Arg Leu Thr Leu Gly Val Tyr Asp Tyr Leu Val  
3780 3785 3790

Ser Thr Gln Glu Phe Arg Tyr Met Asn Ser Gln Gly Leu Leu Pro Pro  
3795 3800 3805

Lys Ser Ser Ile Asp Ala Phe Lys Leu Asn Ile Lys Leu Leu Gly Ile  
3810 3815 3820

Gly Gly Lys Pro Cys Ile Lys Val Ala Thr Val Gln Ser Lys Met Ser  
3825 3830 3835 3840

Asp Val Lys Cys Thr Ser Val Val Leu Leu Ser Val Leu Gln Gln Leu  
3845 3850 3855

Arg Val Glu Ser Ser Ser Lys Leu Trp Ala Gln Cys Val Gln Leu s  
3860 3865 3870

Asn Asp Ile Leu Leu Ala Lys Asp Thr Thr Glu Ala Phe Glu Lys Met  
3875 3880 3885

Val Ser Leu Leu Ser Val Leu Leu Ser Met Gln Gly Ala Val Asp Ile  
3890 3895 3900

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Ala Gln Glu Ala Tyr Glu Gln Ala Val Ala Asn Gly Asp Ser Glu Val  
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Val Leu Lys Lys Leu Lys Lys Ser Leu Asn Val Ala Lys Ser Glu Phe  
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Asp Arg Asp Ala Ala Met Gln Arg Lys Leu Glu Lys Met Ala Asp Gln  
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Ala Met Thr Gln Met Tyr Lys Gln Ala Arg Ser Glu Asp Lys Arg Ala  
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Lys Val Thr Ser Ala Met Gln Thr Met Leu Phe Thr Met Leu Arg Lys  
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Leu Asp Asn Asp Ala Leu Asn Asn Ile Ile Asn Asn Ala Arg Asp Gly  
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Cys Val Pro Leu Asn Ile Ile Pro Leu Thr Thr Ala Ala Lys Leu Met  
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Ala Asp Ser Lys Ile Val Gln Leu Ser Glu Ile Asn Met Asp Asn Ser  
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Pro Asn Leu Ala Trp Pro Leu Ile Val Thr Ala Leu Arg Ala Asn Ser  
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Ala Val Lys Leu Gln Asn Asn Glu Leu Ser Pro Val Ala Leu Arg Gln  
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Ala Leu Ala Tyr Tyr Asn Asn Ser Lys Gly Gly Arg Phe Val Leu Ala  
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Leu Leu Ser Asp His Gln Asp Leu Lys Trp Ala Arg Phe Pro Lys Ser  
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Phe Tyr Asp Phe Ala Val Ser Lys Gly Phe Phe Lys Glu Gly Ser Ser  
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Gly Val Ala Pro Gly Thr Ala Val Leu Arg Gln Trp Leu Pro Thr Gly  
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 35 40 45  
 Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val Leu Pro Gln Leu  
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 Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala Leu Ser Thr Asn  
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 His Gly His Lys Val Val Glu Leu Val Ala Glu Met Asp Gly Ile Gln  
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 Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg Lys Asn Gly Asn  
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 Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu Lys Ser Tyr Asp  
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 Leu Asn Gly Gly Ala Val Thr Arg Tyr Val Asp Asn Asn Phe Cys Gly  
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 Pro Asp Gly Tyr Pro Leu Asp Cys Ile Lys Asp Phe Leu Ala Arg Ala  
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 Lys Arg Gly Val Tyr Cys Cys Arg Asp His Glu His Glu Ile Ala Trp  
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 Phe Thr Glu Arg Ser Asp Lys Ser Tyr Glu His Gln Thr Pro Phe Glu  
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| Pro Val Ala Ser Pro Gln Glu Cys Asn Asn Met His Leu Ser Thr Leu | 305 | 310 | 315 | 320 |
| Met Lys Cys Asn His Cys Asp Glu Val Ser Trp Gln Thr Cys Asp Phe |     | 325 | 330 | 335 |
| Leu Lys Ala Thr Cys Glu His Cys Gly Thr Glu Asn Leu Val Ile Glu |     | 340 | 345 | 350 |
| Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met |     | 355 | 360 | 365 |
| Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val | 370 | 375 | 380 |     |
| Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly | 385 | 390 | 395 | 400 |
| Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys |     | 405 | 410 | 415 |
| Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly |     | 420 | 425 | 430 |
| Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu |     | 435 | 440 | 445 |
| Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val | 450 | 455 | 460 |     |
| Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe | 465 | 470 | 475 | 480 |
| Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr |     | 485 | 490 | 495 |
| Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr |     | 500 | 505 | 510 |
| Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser |     | 515 | 520 | 525 |
| Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala Ala Gly Val Ile | 530 | 535 | 540 |     |
| Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pro | 545 | 550 | 555 | 560 |
| Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln |     | 565 | 570 | 575 |
| Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser Asp Leu Leu Thr |     | 580 | 585 | 590 |
| Asn Ser Val Ile Ile Met Ala Tyr Val Thr Gly Gly Leu Val Gln Gln |     | 595 | 600 | 605 |
| Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr Val Glu Lys Leu |     |     |     |     |

## 620

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 Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Ile Val  
                                  1010                                   1015                                   1020  
 Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala Ala Asn  
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 Ile His Leu Lys His Gly Gly Gly Val Ala Gly Ala Leu Asn Lys Ala  
    1045                                   1050                                   1055  
 Thr Asn Gly Ala Met Gln Lys Glu Ser Asp Asp Tyr Ile Lys Leu Asn  
                                  1060                                   1065                                   1070  
 Gly Pro Leu Thr Val Gly Gly Ser Cys Leu Leu Ser Gly His Asn Leu  
                                  1075                                   1080                                   1085  
 Ala Lys Lys Cys Leu His Val Val Gly Pro Asn Leu Asn Ala Gly Glu  
                                  1090                                   1095                                   1100  
 Asp Ile Gln Leu Leu Lys Ala Ala Tyr Glu Asn Phe Asn Ser Gln Asp  
                                  1105                                   1110                                   1115                                   1120  
 Ile Leu Leu Ala Pro Leu Leu Ser Ala Gly Ile Phe Gly Ala Lys Pro  
    1125                                   1130                                   1135  
 Leu Gln Ser Leu Gln Val Cys Val Gln Thr Val Arg Thr Gln Val Tyr  
                                  1140                                   1145                                   1150  
 Ile Ala Val Asn Asp Lys Ala Leu Tyr Glu Gln Val Val Met Asp Tyr  
                                  1155                                   1160                                   1165  
 Leu Asp Asn Leu Lys Pro Arg Val Glu Ala Pro Lys Gln Glu Glu Pro  
                                  1170                                   1175                                   1180  
 Pro Asn Thr Glu Asp Ser Lys Thr Glu Glu Lys Ser Val Val Gln Lys  
                                  1185                                   1190                                   1195                                   1200  
 Pro Val Asp Val Lys Pro Lys Ile Lys Ala Cys Ile Asp Glu Val Thr  
    1205                                   1210                                   1215  
 Thr Thr Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys Leu Leu Leu Phe  
                                  1220                                   1225                                   1230  
 Ala Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln Asn Met Leu Arg  
                                  1235                                   1240                                   1245  
 Gly Glu Asp Met Ser Phe Leu Glu Lys Asp Ala Pro Tyr Met Val Gly  
                                  1250                                   1255                                   1260  
 Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val Ile Pro Ser Lys  
                                  1265                                   1270                                   1275                                   1280  
 Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala Leu Lys Lys Val

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|   |      |      |
|---|------|------|
| 1285  | 1290 | 1295 |
| Pro Val Asp Glu Tyr Ile Thr Thr Tyr Pro Gly Gln Gly Cys Ala Gly |      |      |
| 1300  | 1305 | 1310 |
| Tyr Thr Leu Glu Glu Ala Lys Thr Ala Leu Lys Lys Cys Lys Ser Ala |      |      |
| 1315  | 1320 | 1325 |
| Phe Tyr Val Leu Pro Ser Glu Ala Pro Asn Ala Lys Glu Glu Ile Leu |      |      |
| 1330  | 1335 | 1340 |
| Gly Thr Val Ser Trp Asn Leu Arg Glu Met Leu Ala His Ala Glu Glu |      |      |
| 1345  | 1350 | 1355 |
| Thr Arg Lys Leu Met Pro Ile Cys Met Asp Val Arg Ala Ile Met Ala |      |      |
| 1365  | 1370 | 1375 |
| Thr Ile Gln Arg Lys Tyr Lys Gly Ile Lys Ile Gln Glu Gly Ile Val |      |      |
| 1380  | 1385 | 1390 |
| Asp Tyr Gly Val Arg Phe Phe Phe Tyr Thr Ser Lys Glu Pro Val Ala |      |      |
| 1395  | 1400 | 1405 |
| Ser Ile Ile Thr Lys Leu Asn Ser Leu Asn Glu Pro Leu Val Thr Met |      |      |
| 1410  | 1415 | 1420 |
| Pro Ile Gly Tyr Val Thr His Gly Phe Asn Leu Glu Glu Ala Ala Arg |      |      |
| 1425  | 1430 | 1435 |
| Cys Met Arg Ser Leu Lys Ala Pro Ala Val Val Ser Val Ser Ser Pro |      |      |
| 1445  | 1450 | 1455 |
| Asp Ala Val Thr Thr Tyr Asn Gly Tyr Leu Thr Ser Ser Ser Lys Thr |      |      |
| 1460  | 1465 | 1470 |
| Ser Glu Glu His Phe Val Glu Thr Val Ser Leu Ala Gly Ser Tyr Arg |      |      |
| 1475  | 1480 | 1485 |
| Asp Trp Ser Tyr Ser Gly Gln Arg Thr Glu Leu Gly Val Glu Phe Leu |      |      |
| 1490  | 1495 | 1500 |
| Lys Arg Gly Asp Lys Ile Val Tyr His Thr Leu Glu Ser Pro Val Glu |      |      |
| 1505  | 1510 | 1515 |
| Phe His Leu Asp Gly Glu Val Leu Ser Leu Asp Lys Leu Lys Ser Leu |      |      |
| 1525  | 1530 | 1535 |
| Leu Ser Leu Arg Glu Val Lys Thr Ile Lys Val Phe Thr Thr Val Asp |      |      |
| 1540  | 1545 | 1550 |
| Asn Thr Asn Leu His Thr Gln Leu Val Asp Met Ser Met Thr Tyr Gly |      |      |
| 1555  | 1560 | 1565 |
| Gln Gln Phe Gly Pro Thr Tyr Leu Asp Gly Ala Asp Val Thr Lys Ile |      |      |
| 1570  | 1575 | 1580 |
| Lys Pro His Val Asn His Glu Gly Lys Thr Phe Phe Val Leu Pro Ser |      |      |
| 1585  | 1590 | 1595 |
| Asp Asp Thr Leu Arg Ser Glu Ala Phe Glu Tyr Tyr His Thr Leu Asp |      |      |
| 1605  | 1610 | 1615 |
| Glu Ser Phe Leu Gly Arg Tyr Met Ser Ala Leu Asn His Thr Lys Lys |      |      |



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|   |      |      |
|---|------|------|
| 1620  | 1625 | 1630 |
| Trp Lys Phe Pro Gln Val Gly Gly Leu Thr Ser Ile Lys Trp Ala Asp |      |      |
| 1635  | 1640 | 1645 |
| Asn Asn Cys Tyr Leu Ser Ser Val Leu Leu Ala Leu Gln Gln Leu Glu |      |      |
| 1650  | 1655 | 1660 |
| Val Lys Phe Asn Ala Pro Ala Leu Gln Glu Ala Tyr Tyr Arg Ala Arg |      |      |
| 1665  | 1670 | 1675 |
| Ala Gly Asp Ala Ala Asn Phe Cys Ala Leu Ile Leu Ala Tyr Ser Asn |      |      |
| 1685  | 1690 | 1695 |
| Lys Thr Val Gly Glu Leu Gly Asp Val Arg Glu Thr Met Thr His Leu |      |      |
| 1700  | 1705 | 1710 |
| Leu Gln His Ala Asn Leu Glu Ser Ala Lys Arg Val Leu Asn Val Val |      |      |
| 1715  | 1720 | 1725 |
| Cys Lys His Cys Gly Gln Lys Thr Thr Thr Leu Thr Gly Val Glu Ala |      |      |
| 1730  | 1735 | 1740 |
| Val Met Tyr Met Gly Thr Leu Ser Tyr Asp Asn Leu Lys Thr Gly Val |      |      |
| 1745  | 1750 | 1755 |
| Ser Ile Pro Cys Val Cys Gly Arg Asp Ala Thr Gln Tyr Leu Val Gln |      |      |
| 1765  | 1770 | 1775 |
| Gln Glu Ser Ser Phe Val Met Met Ser Ala Pro Pro Ala Glu Tyr Lys |      |      |
| 1780  | 1785 | 1790 |
| Leu Gln Gln Gly Thr Phe Leu Cys Ala Asn Glu Tyr Thr Gly Asn Tyr |      |      |
| 1795  | 1800 | 1805 |
| Gln Cys Gly His Tyr Thr His Ile Thr Ala Lys Glu Thr Leu Tyr Arg |      |      |
| 1810  | 1815 | 1820 |
| Ile Asp Gly Ala His Leu Thr Lys Met Ser Glu Tyr Lys Gly Pro Val |      |      |
| 1825  | 1830 | 1835 |
| Thr Asp Val Phe Tyr Lys Glu Thr Ser Tyr Thr Thr Thr Ile Lys Pro |      |      |
| 1845  | 1850 | 1855 |
| Val Ser Tyr Lys Leu Asp Gly Val Thr Tyr Thr Glu Ile Glu Pro Lys |      |      |
| 1860  | 1865 | 1870 |
| Leu Asp Gly Tyr Tyr Lys Lys Asp Asn Ala Tyr Tyr Thr Glu Gln Pro |      |      |
| 1875  | 1880 | 1885 |
| Ile Asp Leu Val Pro Thr Gln Pro Leu Pro Asn Ala Ser Phe Asp Asn |      |      |
| 1890  | 1895 | 1900 |
| Phe Lys Leu Thr Cys Ser Asn Thr Lys Phe Ala Asp Asp Leu Asn Gln |      |      |
| 1905  | 1910 | 1915 |
| Met Thr Gly Phe Thr Lys Pro Ala Ser Arg Glu Leu Ser Val Thr Phe |      |      |
| 1925  | 1930 | 1935 |
| Phe Pro Asp Leu Asn Gly Asp Val Val Ala Ile Asp Tyr Arg His Tyr |      |      |
| 1940  | 1945 | 1950 |
| Ser Ala Ser Phe Lys Lys Gly Ala Lys Leu Leu His Lys Pro Ile Val |      |      |

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| 1955  | 1960 | 1965      |
|---|------|-----------|
| Trp His Ile Asn Gln Ala Thr Thr Lys Thr Thr Phe Lys Pro Asn Thr<br>1970 | 1975 | 1980      |
| Trp Cys Leu Arg Cys Leu Trp Ser Thr Lys Pro Val Asp Thr Ser Asn<br>1985 | 1990 | 1995 2000 |
| Ser Phe Glu Val Leu Ala Val Glu Asp Thr Gln Gly Met Asp Asn Leu<br>2005 | 2010 | 2015      |
| Ala Cys Glu Ser Gln Gln Pro Thr Ser Glu Glu Val Val Glu Asn Pro<br>2020 | 2025 | 2030      |
| Thr Ile Gln Lys Glu Val Ile Glu Cys Asp Val Lys Thr Thr Glu Val<br>2035 | 2040 | 2045      |
| Val Gly Asn Val Ile Leu Lys Pro Ser Asp Glu Gly Val Lys Val Thr<br>2050 | 2055 | 2060      |
| Gln Glu Leu Gly His Glu Asp Leu Met Ala Ala Tyr Val Glu Asn Thr<br>2065 | 2070 | 2075 2080 |
| Ser Ile Thr Ile Lys Lys Pro Asn Glu Leu Ser Leu Ala Leu Gly Leu<br>2085 | 2090 | 2095      |
| Lys Thr Ile Ala Thr His Gly Ile Ala Ala Ile Asn Ser Val Pro Trp<br>2100 | 2105 | 2110      |
| Ser Lys Ile Leu Ala Tyr Val Lys Pro Phe Leu Gly Gln Ala Ala Ile<br>2115 | 2120 | 2125      |
| Thr Thr Ser Asn Cys Ala Lys Arg Leu Ala Gln Arg Val Phe Asn Asn<br>2130 | 2135 | 2140      |
| Tyr Met Pro Tyr Val Phe Thr Leu Leu Phe Gln Leu Cys Thr Phe Thr<br>2145 | 2150 | 2155 2160 |
| Lys Ser Thr Asn Ser Arg Ile Arg Ala Ser Leu Pro Thr Thr Ile Ala<br>2165 | 2170 | 2175      |
| Lys Asn Ser Val Lys Ser Val Ala Lys Leu Cys Leu Asp Ala Gly Ile<br>2180 | 2185 | 2190      |
| Asn Tyr Val Lys Ser Pro Lys Phe Ser Lys Leu Phe Thr Ile Ala Met<br>2195 | 2200 | 2205      |
| Trp Leu Leu Leu Leu Ser Ile Cys Leu Gly Ser Leu Ile Cys Val Thr<br>2210 | 2215 | 2220      |
| Ala Ala Phe Gly Val Leu Leu Ser Asn Phe Gly Ala Pro Ser Tyr Cys<br>2225 | 2230 | 2235 2240 |
| Asn Gly Val Arg Glu Leu Tyr Leu Asn Ser Ser Asn Val Thr Thr Met<br>2245 | 2250 | 2255      |
| Asp Phe Cys Glu Gly Ser Phe Pro Cys Ser Ile Cys Leu Ser Gly Leu<br>2260 | 2265 | 2270      |
| Asp Ser Leu Asp Ser Tyr Pro Ala Leu Glu Thr Ile Gln Val Thr Ile<br>2275 | 2280 | 2285      |
| Ser Ser Tyr Lys Leu Asp Leu Thr Ile Leu Gly Leu Ala Ala Glu Trp         |      |           |

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2290                      2295                      2300  
 Val Leu Ala Tyr Met Leu Phe Thr Lys Phe Phe Tyr Leu Leu Gly Leu  
 2305                      2310                      2315                      2320  
 Ser Ala Ile Met Gln Val Phe Phe Gly Tyr Phe Ala Ser His Phe Ile  
                          2325                      2330                      2335  
 Ser Asn Ser Trp Leu Met Trp Phe Ile Ile Ser Ile Val Gln Met Ala  
                          2340                      2345                      2350  
 Pro Val Ser Ala Met Val Arg Met Tyr Ile Phe Phe Ala Ser Phe Tyr  
                          2355                      2360                      2365  
 Tyr Ile Trp Lys Ser Tyr Val His Ile Met Asp Gly Cys Thr Ser Ser  
                          2370                      2375                      2380  
 Thr Cys Met Met Cys Tyr Lys Arg Asn Arg Ala Thr Arg Val Glu Cys  
 2385                      2390                      2395                      2400  
 Thr Thr Ile Val Asn Gly Met Lys Arg Ser Phe Tyr Val Tyr Ala Asn  
                          2405                      2410                      2415  
 Gly Gly Arg Gly Phe Cys Lys Thr His Asn Trp Asn Cys Leu Asn Cys  
                          2420                      2425                      2430  
 Asp Thr Phe Cys Thr Gly Ser Thr Phe Ile Ser Asp Glu Val Ala Arg  
                          2435                      2440                      2445  
 Asp Leu Ser Leu Gln Phe Lys Arg Pro Ile Asn Pro Thr Asp Gln Ser  
                          2450                      2455                      2460  
 Ser Tyr Ile Val Asp Ser Val Ala Val Lys Asn Gly Ala Leu His Leu  
 2465                      2470                      2475                      2480  
 Tyr Phe Asp Lys Ala Gly Gln Lys Thr Tyr Glu Arg His Pro Leu Ser  
                          2485                      2490                      2495  
 His Phe Val Asn Leu Asp Asn Leu Arg Ala Asn Asn Thr Lys Gly Ser  
                          2500                      2505                      2510  
 Leu Pro Ile Asn Val Ile Val Phe Asp Gly Lys Ser Lys Cys Asp Glu  
                          2515                      2520                      2525  
 Ser Ala Ser Lys Ser Ala Ser Val Tyr Tyr Ser Gln Leu Met Cys Gln  
                          2530                      2535                      2540  
 Pro Ile Leu Leu Leu Asp Gln Ala Leu Val Ser Asp Val Gly Asp Ser  
 2545                      2550                      2555                      2560  
 Thr Glu Val Ser Val Lys Met Phe Asp Ala Tyr Val Asp Thr Phe Ser  
                          2565                      2570                      2575  
 Ala Thr Phe Ser Val Pro Met Glu Lys Leu Lys Ala Leu Val Ala Thr  
                          2580                      2585                      2590  
 Ala His Ser Glu Leu Ala Lys Gly Val Ala Leu Asp Gly Val Leu Ser  
                          2595                      2600                      2605  
 Thr Phe Val Ser Ala Ala Arg Gln Gly Val Val Asp Thr Asp Val Asp  
 2610                      2615                      2620  
 Thr Lys Asp Val Ile Glu Cys Leu Lys Leu Ser His His Ser Asp Leu

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2625                      2630                      2635                      2640  
Glu Val Thr Gly Asp Ser Cys Asn Asn Phe Met Leu Thr Tyr Asn Lys  
                                 2645                      2650                      2655  
Val Glu Asn Met Thr Pro Arg Asp Leu Gly Ala Cys Ile Asp Cys Asn  
                                 2660                      2665                      2670  
Ala Arg His Ile Asn Ala Gln Val Ala Lys Ser His Asn Val Ser Leu  
                                 2675                      2680                      2685  
Ile Trp Asn Val Lys Asp Tyr Met Ser Leu Ser Glu Gln Leu Arg Lys  
                                 2690                      2695                      2700  
Gln Ile Arg Ser Ala Ala Lys Lys Asn Asn Ile Pro Phe Arg Leu Thr  
2705    2710                      2715                      2720  
Cys Ala Thr Thr Arg Gln Val Val Asn Val Ile Thr Thr Lys Ile Ser  
                                 2725                      2730                      2735  
Leu Lys Gly Gly Lys Ile Val Ser Thr Cys Phe Lys Leu Met Leu Lys  
                                 2740                      2745                      2750  
Ala Thr Leu Leu Cys Val Leu Ala Ala Leu Val Cys Tyr Ile Val Met  
                                 2755                      2760                      2765  
Pro Val His Thr Leu Ser Ile His Asp Gly Tyr Thr Asn Glu Ile Ile  
                                 2770                      2775                      2780  
Gly Tyr Lys Ala Ile Gln Asp Gly Val Thr Arg Asp Ile Ile Ser Thr  
2785    2790                      2795                      2800  
Asp Asp Cys Phe Ala Asn Lys His Ala Gly Phe Asp Ala Trp Phe Ser  
                                 2805                      2810                      2815  
Gln Arg Gly Gly Ser Tyr Lys Asn Asp Lys Ser Cys Pro Val Val Ala  
                                 2820                      2825                      2830  
Ala Ile Ile Thr Arg Glu Ile Gly Phe Ile Val Pro Gly Leu Pro Gly  
                                 2835                      2840                      2845  
Thr Val Leu Arg Ala Ile Asn Gly Asp Phe Leu His Phe Leu Pro Arg  
                                 2850                      2855                      2860  
Val Phe Ser Ala Val Gly Asn Ile Cys Tyr Thr Pro Ser Lys Leu Ile  
2865    2870                      2875                      2880  
Glu Tyr Ser Asp Phe Ala Thr Ser Ala Cys Val Leu Ala Ala Glu Cys  
                                 2885                      2890                      2895  
Thr Ile Phe Lys Asp Ala Met Gly Lys Pro Val Pro Tyr Cys Tyr Asp  
                                 2900                      2905                      2910  
Thr Asn Leu Leu Glu Gly Ser Ile Ser Tyr Ser Glu Leu Arg Pro Asp  
                                 2915                      2920                      2925  
Thr Arg Tyr Val Leu Met Asp Gly Ser Ile Ile Gln Phe Pro Asn Thr  
                                 2930                      2935                      2940  
Tyr Leu Glu Gly Ser Val Arg Val Val Thr Thr Phe Asp Ala Glu Tyr  
2945    2950                      2955                      2960  
Cys Arg His Gly Thr Cys Glu Arg Ser Glu Val Gly Ile Cys Leu Ser

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| 2965 |      |      |      |      |     |      |      |      |      | 2970 |      |      |      |      |      |  |  |  |  | 2975 |  |  |  |  |  |  |  |  |  |
|------|------|------|------|------|-----|------|------|------|------|------|------|------|------|------|------|--|--|--|--|------|--|--|--|--|--|--|--|--|--|
| Thr  | Ser  | Gly  | Arg  | Trp  | Val | Leu  | Asn  | Asn  | Glu  | His  | Tyr  | Arg  | Ala  | Leu  | Ser  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
|      |      |      | 2980 |      |     |      |      | 2985 |      |      |      |      | 2990 |      |      |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| Gly  | Val  | Phe  | Cys  | Gly  | Val | Asp  | Ala  | Met  | Asn  | Leu  | Ile  | Ala  | Asn  | Ile  | Phe  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
|      |      | 2995 |      |      |     |      | 3000 |      |      |      |      | 3005 |      |      |      |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| Thr  | Pro  | Leu  | Val  | Gln  | Pro | Val  | Gly  | Ala  | Leu  | Asp  | Val  | Ser  | Ala  | Ser  | Val  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
|      | 3010 |      |      |      |     | 3015 |      |      |      |      | 3020 |      |      |      |      |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| Val  | Ala  | Gly  | Gly  | Ile  | Ile | Ala  | Ile  | Leu  | Val  | Thr  | Cys  | Ala  | Ala  | Tyr  | Tyr  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| 3025 |      |      |      | 3030 |     |      |      |      |      | 3035 |      |      |      |      | 3040 |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| Phe  | Met  | Lys  | Phe  | Arg  | Arg | Val  | Phe  | Gly  | Glu  | Tyr  | Asn  | His  | Val  | Val  | Ala  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
|      |      |      |      | 3045 |     |      |      |      | 3050 |      |      |      |      | 3055 |      |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| Ala  | Asn  | Ala  | Leu  | Leu  | Phe | Leu  | Met  | Ser  | Phe  | Thr  | Ile  | Leu  | Cys  | Leu  | Val  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
|      |      |      | 3060 |      |     |      |      | 3065 |      |      |      |      | 3070 |      |      |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| Pro  | Ala  | Tyr  | Ser  | Phe  | Leu | Pro  | Gly  | Val  | Tyr  | Ser  | Val  | Phe  | Tyr  | Leu  | Tyr  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
|      |      | 3075 |      |      |     |      | 3080 |      |      |      |      | 3085 |      |      |      |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| Leu  | Thr  | Phe  | Tyr  | Phe  | Thr | Asn  | Asp  | Val  | Ser  | Phe  | Leu  | Ala  | His  | Leu  | Gln  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
|      | 3090 |      |      |      |     | 3095 |      |      |      |      | 3100 |      |      |      |      |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| Trp  | Phe  | Ala  | Met  | Phe  | Ser | Pro  | Ile  | Val  | Pro  | Phe  | Trp  | Ile  | Thr  | Ala  | Ile  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| 3105 |      |      |      | 3110 |     |      |      |      |      | 3115 |      |      |      |      | 3120 |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| Tyr  | Val  | Phe  | Cys  | Ile  | Ser | Leu  | Lys  | His  | Cys  | His  | Trp  | Phe  | Phe  | Asn  | Asn  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
|      |      |      | 3125 |      |     |      |      |      | 3130 |      |      |      |      | 3135 |      |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| Tyr  | Leu  | Arg  | Lys  | Arg  | Val | Met  | Phe  | Asn  | Gly  | Val  | Thr  | Phe  | Ser  | Thr  | Phe  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
|      |      |      | 3140 |      |     |      |      | 3145 |      |      |      |      | 3150 |      |      |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| Glu  | Glu  | Ala  | Ala  | Leu  | Cys | Thr  | Phe  | Leu  | Leu  | Asn  | Lys  | Glu  | Met  | Tyr  | Leu  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
|      |      | 3155 |      |      |     |      | 3160 |      |      |      |      | 3165 |      |      |      |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| Lys  | Leu  | Arg  | Ser  | Glu  | Thr | Leu  | Leu  | Pro  | Leu  | Thr  | Gln  | Tyr  | Asn  | Arg  | Tyr  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
|      | 3170 |      |      |      |     | 3175 |      |      |      |      | 3180 |      |      |      |      |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| Leu  | Ala  | Leu  | Tyr  | Asn  | Lys | Tyr  | Lys  | Tyr  | Phe  | Ser  | Gly  | Ala  | Leu  | Asp  | Thr  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| 3185 |      |      |      | 3190 |     |      |      |      |      | 3195 |      |      |      | 3200 |      |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| Thr  | Ser  | Tyr  | Arg  | Glu  | Ala | Ala  | Cys  | Cys  | His  | Leu  | Ala  | Lys  | Ala  | Leu  | Asn  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
|      |      |      | 3205 |      |     |      |      |      | 3210 |      |      |      |      | 3215 |      |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| Asp  | Phe  | Ser  | Asn  | Ser  | Gly | Ala  | Asp  | Val  | Leu  | Tyr  | Gln  | Pro  | Pro  | Gln  | Thr  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
|      |      |      | 3220 |      |     |      |      | 3225 |      |      |      |      | 3230 |      |      |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| Ser  | Ile  | Thr  | Ser  | Ala  | Val | Leu  | Gln  | Ser  | Gly  | Phe  | Arg  | Lys  | Met  | Ala  | Phe  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
|      | 3235 |      |      |      |     | 3240 |      |      |      |      | 3245 |      |      |      |      |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| Pro  | Ser  | Gly  | Lys  | Val  | Glu | Gly  | Cys  | Met  | Val  | Gln  | Val  | Thr  | Cys  | Gly  | Thr  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
|      | 3250 |      |      |      |     | 3255 |      |      |      |      | 3260 |      |      |      |      |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| Thr  | Thr  | Leu  | Asn  | Gly  | Leu | Trp  | Leu  | Asp  | Asp  | Thr  | Val  | Tyr  | Cys  | Pro  | Arg  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| 3265 |      |      |      | 3270 |     |      |      |      |      | 3275 |      |      |      |      | 3280 |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| His  | Val  | Ile  | Cys  | Thr  | Ala | Glu  | Asp  | Met  | Leu  | Asn  | Pro  | Asn  | Tyr  | Glu  | Asp  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
|      |      |      | 3285 |      |     |      |      |      | 3290 |      |      |      |      | 3295 |      |  |  |  |  |      |  |  |  |  |  |  |  |  |  |
| Leu  | Leu  | Ile  | Arg  | Lys  | Ser | Asn  | His  | Ser  | Phe  | Leu  | Val  | Gln  | Ala  | Gly  | Asn  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |

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3300 3305 3310  
 Val Gln Leu Arg Val Ile Gly His Ser Met Gln Asn Cys Leu Leu Arg  
 3315 3320 3325  
 Leu Lys Val Asp Thr Ser Asn Pro Lys Thr Pro Lys Tyr Lys Phe Val  
 3330 3335 3340  
 Arg Ile Gln Pro Gly Gln Thr Phe Ser Val Leu Ala Cys Tyr Asn Gly  
 3345 3350 3355 3360  
 Ser Pro Ser Gly Val Tyr Gln Cys Ala Met Arg Pro Asn His Thr Ile  
 3365 3370 3375  
 Lys Gly Ser Phe Leu Asn Gly Ser Cys Gly Ser Val Gly Phe Asn Ile  
 3380 3385 3390  
 Asp Tyr Asp Cys Val Ser Phe Cys Tyr Met His His Met Glu Leu Pro  
 3395 3400 3405  
 Thr Gly Val His Ala Gly Thr Asp Leu Glu Gly Lys Phe Tyr Gly Pro  
 3410 3415 3420  
 Phe Val Asp Arg Gln Thr Ala Gln Ala Ala Gly Thr Asp Thr Thr Ile  
 3425 3430 3435 3440  
 Thr Leu Asn Val Leu Ala Trp Leu Tyr Ala Ala Val Ile Asn Gly Asp  
 3445 3450 3455  
 Arg Trp Phe Leu Asn Arg Phe Thr Thr Thr Leu Asn Asp Phe Asn Leu  
 3460 3465 3470  
 Val Ala Met Lys Tyr Asn Tyr Glu Pro Leu Thr Gln Asp His Val Asp  
 3475 3480 3485  
 Ile Leu Gly Pro Leu Ser Ala Gln Thr Gly Ile Ala Val Leu Asp Met  
 3490 3495 3500  
 Cys Ala Ala Leu Lys Glu Leu Leu Gln Asn Gly Met Asn Gly Arg Thr  
 3505 3510 3515 3520  
 Ile Leu Gly Ser Thr Ile Leu Glu Asp Glu Phe Thr Pro Phe Asp Val  
 3525 3530 3535  
 Val Arg Gln Cys Ser Gly Val Thr Phe Gln Gly Lys Phe Lys Lys Ile  
 3540 3545 3550  
 Val Lys Gly Thr His His Trp Met Leu Leu Thr Phe Leu Thr Ser Leu  
 3555 3560 3565  
 Leu Ile Leu Val Gln Ser Thr Gln Trp Ser Leu Phe Phe Phe Val Tyr  
 3570 3575 3580  
 Glu Asn Ala Phe Leu Pro Phe Thr Leu Gly Ile Met Ala Ile Ala Ala  
 3585 3590 3595 3600  
 Cys Ala Met Leu Leu Val Lys His Lys His Ala Phe Leu Cys Leu Phe  
 3605 3610 3615  
 Leu Leu Pro Ser Leu Ala Thr Val Ala Tyr Phe Asn Met Val Tyr Met  
 3620 3625 3630  
 Pro Ala Ser Trp Val Met Arg Ile Met Thr Trp Leu Glu Leu Ala Asp

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3635                      3640                      3645  
 Thr Ser Leu Ser Gly Tyr Arg Leu Lys Asp Cys Val Met Tyr Ala Ser  
 3650                      3655                      3660  
 Ala Leu Val Leu Leu Ile Leu Met Thr Ala Arg Thr Val Tyr Asp Asp  
 3665                      3670                      3675                      3680  
 Ala Ala Arg Arg Val Trp Thr Leu Met Asn Val Ile Thr Leu Val Tyr  
 3685                      3690                      3695  
 Lys Val Tyr Tyr Gly Asn Ala Leu Asp Gln Ala Ile Ser Met Trp Ala  
 3700                      3705                      3710  
 Leu Val Ile Ser Val Thr Ser Asn Tyr Ser Gly Val Val Thr Thr Ile  
 3715                      3720                      3725  
 Met Phe Leu Ala Arg Ala Ile Val Phe Val Cys Val Glu Tyr Tyr Pro  
 3730                      3735                      3740  
 Leu Leu Phe Ile Thr Gly Asn Thr Leu Gln Cys Ile Met Leu Val Tyr  
 3745                      3750                      3755                      3760  
 Cys Phe Leu Gly Tyr Cys Cys Cys Cys Tyr Phe Gly Leu Phe Cys Leu  
 3765                      3770                      3775  
 Leu Asn Arg Tyr Phe Arg Leu Thr Leu Gly Val Tyr Asp Tyr Leu Val  
 3780                      3785                      3790  
 Ser Thr Gln Glu Phe Arg Tyr Met Asn Ser Gln Gly Leu Leu Pro Pro  
 3795                      3800                      3805  
 Lys Ser Ser Ile Asp Ala Phe Lys Leu Asn Ile Lys Leu Leu Gly Ile  
 3810                      3815                      3820  
 Gly Gly Lys Pro Cys Ile Lys Val Ala Thr Val Gln Ser Lys Met Ser  
 3825                      3830                      3835                      3840  
 Asp Val Lys Cys Thr Ser Val Val Leu Leu Ser Val Leu Gln Gln Leu  
 3845                      3850                      3855  
 Arg Val Glu Ser Ser Ser Lys Leu Trp Ala Gln Cys Val Gln Leu His  
 3860                      3865                      3870  
 Asn Asp Ile Leu Leu Ala Lys Asp Thr Thr Glu Ala Phe Glu Lys Met  
 3875                      3880                      3885  
 Val Ser Leu Leu Ser Val Leu Leu Ser Met Gln Gly Ala Val Asp Ile  
 3890                      3895                      3900  
 Asn Arg Leu Cys Glu Glu Met Leu Asp Asn Arg Ala Thr Leu Gln Ala  
 3905                      3910                      3915                      3920  
 Ile Ala Ser Glu Phe Ser Ser Leu Pro Ser Tyr Ala Ala Tyr Ala Thr  
 3925                      3930                      3935  
 Ala Gln Glu Ala Tyr Glu Gln Ala Val Ala Asn Gly Asp Ser Glu Val  
 3940                      3945                      3950  
 Val Leu Lys Lys Leu Lys Lys Ser Leu Asn Val Ala Lys Ser Glu Phe  
 3955                      3960                      3965  
 Asp Arg Asp Ala Ala Met Gln Arg Lys Leu Glu Lys Met Ala Asp Gln

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3970

3975

3980

Ala Met Thr Gln Met Tyr Lys Gln Ala Arg Ser Glu Asp Lys Arg Ala  
 3985 3990 3995 4000  
 Lys Val Thr Ser Ala Met Gln Thr Met Leu Phe Thr Met Leu Arg Lys  
 4005 4010 4015  
 Leu Asp Asn Asp Ala Leu Asn Asn Ile Ile Asn Asn Ala Arg Asp Gly  
 4020 4025 4030  
 Cys Val Pro Leu Asn Ile Ile Pro Leu Thr Thr Ala Ala Lys Leu Met  
 4035 4040 4045  
 Val Val Val Pro Asp Tyr Gly Thr Tyr Lys Asn Thr Cys Asp Gly Asn  
 4050 4055 4060  
 Thr Phe Thr Tyr Ala Ser Ala Leu Trp Glu Ile Gln Gln Val Val Asp  
 4065 4070 4075 4080  
 Ala Asp Ser Lys Ile Val Gln Leu Ser Glu Ile Asn Met Asp Asn Ser  
 4085 4090 4095  
 Pro Asn Leu Ala Trp Pro Leu Ile Val Thr Ala Leu Arg Ala Asn Ser  
 4100 4105 4110  
 Ala Val Lys Leu Gln Asn Asn Glu Leu Ser Pro Val Ala Leu Arg Gln  
 4115 4120 4125  
 Met Ser Cys Ala Ala Gly Thr Thr Gln Thr Ala Cys Thr Asp Asp Asn  
 4130 4135 4140  
 Ala Leu Ala Tyr Tyr Asn Asn Ser Lys Gly Gly Arg Phe Val Leu Ala  
 4145 4150 4155 4160  
 Leu Leu Ser Asp His Gln Asp Leu Lys Trp Ala Arg Phe Pro Lys Ser  
 4165 4170 4175  
 Asp Gly Thr Gly Thr Ile Tyr Thr Glu Leu Glu Pro Pro Cys Arg Phe  
 4180 4185 4190  
 Val Thr Asp Thr Pro Lys Gly Pro Lys Val Lys Tyr Leu Tyr Phe Ile  
 4195 4200 4205  
 Lys Gly Leu Asn Asn Leu Asn Arg Gly Met Val Leu Gly Ser Leu Ala  
 4210 4215 4220  
 Ala Thr Val Arg Leu Gln Ala Gly Asn Ala Thr Glu Val Pro Ala Asn  
 4225 4230 4235 4240  
 Ser Thr Val Leu Ser Phe Cys Ala Phe Ala Val Asp Pro Ala Lys Ala  
 4245 4250 4255  
 Tyr Lys Asp Tyr Leu Ala Ser Gly Gly Gln Pro Ile Thr Asn Cys Val  
 4260 4265 4270  
 Lys Met Leu Cys Thr His Thr Gly Thr Gly Gln Ala Ile Thr Val Thr  
 4275 4280 4285  
 Pro Glu Ala Asn Met Asp Gln Glu Ser Phe Gly Gly Ala Ser Cys Cys  
 4290 4295 4300  
 Leu Tyr Cys Arg Cys His Ile Asp His Pro Asn Pro Lys Gly Phe Cys



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4305                      4310                      4315                      4320  
 Asp Leu Lys Gly Lys Tyr Val Gln Ile Pro Thr Thr Cys Ala Asn Asp  
                                  4325                      4330                      4335  
 Pro Val Gly Phe Thr Leu Arg Asn Thr Val Cys Thr Val Cys Gly Met  
                                  4340                      4345                      4350  
 Trp Lys Gly Tyr Gly Cys Ser Cys Asp Gln Leu Arg Glu Pro Leu Met  
                                  4355                      4360                      4365  
 Gln Ser Ala Asp Ala Ser Thr Xaa Xaa Xaa Xaa Gly Val Ser Ala Ala  
                                  4370                      4375                      4380  
 Arg Leu Thr Pro Cys Gly Thr Gly Thr Ser Thr Asp Val Val Tyr Arg  
 4385                      4390                      4395                      4400  
 Ala Phe Asp Ile Tyr Asn Glu Lys Val Ala Gly Phe Ala Lys Phe Leu  
                                  4405                      4410                      4415  
 Lys Thr Asn Cys Cys Arg Phe Gln Glu Lys Asp Glu Glu Gly Asn Leu  
                                  4420                      4425                      4430  
 Leu Asp Ser Tyr Phe Val Val Lys Arg His Thr Met Ser Asn Tyr Gln  
                                  4435                      4440                      4445  
 His Glu Glu Thr Ile Tyr Asn Leu Val Lys Asp Cys Pro Ala Val Ala  
                                  4450                      4455                      4460  
 Val His Asp Phe Phe Lys Phe Arg Val Asp Gly Asp Met Val Pro His  
 4465                      4470                      4475                      4480  
 Ile Ser Arg Gln Arg Leu Thr Lys Tyr Thr Met Ala Asp Leu Val Tyr  
                                  4485                      4490                      4495  
 Ala Leu Arg His Phe Asp Glu Gly Asn Cys Asp Thr Leu Lys Glu Ile  
                                  4500                      4505                      4510  
 Leu Val Thr Tyr Asn Cys Cys Asp Asp Asp Tyr Phe Asn Lys Lys Asp  
                                  4515                      4520                      4525  
 Trp Tyr Asp Phe Val Glu Asn Pro Asp Ile Leu Arg Val Tyr Ala Asn  
                                  4530                      4535                      4540  
 Leu Gly Glu Arg Val Arg Gln Ser Leu Leu Lys Thr Val Gln Phe Cys  
 4545                      4550                      4555                      4560  
 Asp Ala Met Arg Asp Ala Gly Ile Val Gly Val Leu Thr Leu Asp Asn  
                                  4565                      4570                      4575  
 Gln Asp Leu Asn Gly Asn Trp Tyr Asp Phe Gly Asp Phe Val Gln Val  
                                  4580                      4585                      4590  
 Ala Pro Gly Cys Gly Val Pro Ile Val Asp Ser Tyr Tyr Ser Leu Leu  
                                  4595                      4600                      4605  
 Met Pro Ile Leu Thr Leu Thr Arg Ala Leu Ala Ala Glu Ser His Met  
                                  4610                      4615                      4620  
 Asp Ala Asp Leu Ala Lys Pro Leu Ile Lys Trp Asp Leu Leu Lys Tyr  
 4625                      4630                      4635                      4640  
 Asp Phe Thr Glu Glu Arg Leu Cys Leu Phe Asp Arg Tyr Phe Lys Tyr

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4645  
 Trp Asp Gln Thr Tyr His Pro Asn Cys Ile Asn Cys Leu Asp Asp Arg  
 4660 4665 4670  
 Cys Ile Leu His Cys Ala Asn Phe Asn Val Leu Phe Ser Thr Val Phe  
 4675 4680 4685  
 Pro Pro Thr Ser Phe Gly Pro Leu Val Arg Lys Ile Phe Val Asp Gly  
 4690 4695 4700  
 Val Pro Phe Val Val Ser Thr Gly Tyr His Phe Arg Glu Leu Gly Val  
 4705 4710 4715 4720  
 Val His Asn Gln Asp Val Asn Leu His Ser Ser Arg Leu Ser Phe Lys  
 4725 4730 4735  
 Glu Leu Leu Val Tyr Ala Ala Asp Pro Ala Met His Ala Ala Ser Gly  
 4740 4745 4750  
 Asn Leu Leu Leu Asp Lys Arg Thr Thr Cys Phe Ser Val Ala Ala Leu  
 4755 4760 4765  
 Thr Asn Asn Val Ala Phe Gln Thr Val Lys Pro Gly Asn Phe Asn Lys  
 4770 4775 4780  
 Asp Phe Tyr Asp Phe Ala Val Ser Lys Gly Phe Phe Lys Glu Gly Ser  
 4785 4790 4795 4800  
 Ser Val Glu Leu Lys His Phe Phe Phe Ala Gln Asp Gly Asn Ala Ala  
 4805 4810 4815  
 Ile Ser Asp Tyr Asp Tyr Tyr Arg Tyr Asn Leu Pro Thr Met Cys Asp  
 4820 4825 4830  
 Ile Arg Gln Leu Leu Phe Val Val Glu Val Val Asp Lys Tyr Phe Asp  
 4835 4840 4845  
 Cys Tyr Asp Gly Gly Cys Ile Asn Ala Asn Gln Val Ile Val Asn Asn  
 4850 4855 4860  
 Leu Asp Lys Ser Ala Gly Phe Pro Phe Asn Lys Trp Gly Lys Ala Arg  
 4865 4870 4875 4880  
 Leu Tyr Tyr Asp Ser Met Ser Tyr Glu Asp Gln Asp Ala Leu Phe Ala  
 4885 4890 4895  
 Tyr Thr Lys Arg Asn Val Ile Pro Thr Ile Thr Gln Met Asn Leu Lys  
 4900 4905 4910  
 Tyr Ala Ile Ser Ala Lys Asn Arg Ala Arg Thr Val Ala Gly Val Ser  
 4915 4920 4925  
 Ile Cys Ser Thr Met Thr Asn Arg Gln Phe His Gln Lys Leu Leu Lys  
 4930 4935 4940  
 Ser Ile Ala Ala Thr Arg Gly Ala Thr Val Val Ile Gly Thr Ser Lys  
 4945 4950 4955 4960  
 Phe Tyr Gly Gly Trp His Asn Met Leu Lys Thr Val Tyr Ser Asp Val  
 4965 4970 4975  
 Glu Thr Pro His Leu Met Gly Trp Asp Tyr Pro Lys Cys Asp Arg Ala

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|   |      |      |
|---|------|------|
| 4980  | 4985 | 4990 |
| Met Pro Asn Met Leu Arg Ile Met Ala Ser Leu Val Leu Ala Arg Lys |      |      |
| 4995  | 5000 | 5005 |
| His Asn Thr Cys Cys Asn Leu Ser His Arg Phe Tyr Arg Leu Ala Asn |      |      |
| 5010  | 5015 | 5020 |
| Glu Cys Ala Gln Val Leu Ser Glu Met Val Met Cys Gly Gly Ser Leu |      |      |
| 5025  | 5030 | 5035 |
| Tyr Val Lys Pro Gly Gly Thr Ser Ser Gly Asp Ala Thr Thr Ala Tyr |      |      |
|   | 5045 | 5050 |
| Ala Asn Ser Val Phe Asn Ile Cys Gln Ala Val Thr Ala Asn Val Asn |      |      |
|   | 5060 | 5070 |
| Ala Leu Leu Ser Thr Asp Gly Asn Lys Ile Ala Asp Lys Tyr Val Arg |      |      |
|   | 5075 | 5085 |
| Asn Leu Gln His Arg Leu Tyr Glu Cys Leu Tyr Arg Asn Arg Asp Val |      |      |
|   | 5090 | 5100 |
| Asp His Glu Phe Val Asp Glu Phe Tyr Ala Tyr Leu Arg Lys His Phe |      |      |
| 5105  | 5110 | 5115 |
| Ser Met Met Ile Leu Ser Asp Asp Ala Val Val Cys Tyr Asn Ser Asn |      |      |
|   | 5125 | 5130 |
| Tyr Ala Ala Gln Gly Leu Val Ala Ser Ile Lys Asn Phe Lys Ala Val |      |      |
|   | 5140 | 5145 |
| Leu Tyr Tyr Gln Asn Asn Val Phe Met Ser Glu Ala Lys Cys Trp Thr |      |      |
|   | 5155 | 5160 |
| Glu Thr Asp Leu Thr Lys Gly Pro His Glu Phe Cys Ser Gln His Thr |      |      |
|   | 5170 | 5175 |
| Met Leu Val Lys Gln Gly Asp Asp Tyr Val Tyr Leu Pro Tyr Pro Asp |      |      |
| 5185  | 5190 | 5195 |
| Pro Ser Arg Ile Leu Gly Ala Gly Cys Phe Val Asp Asp Ile Val Lys |      |      |
|   | 5205 | 5210 |
| Thr Asp Gly Thr Leu Met Ile Glu Arg Phe Val Ser Leu Ala Ile Asp |      |      |
|   | 5220 | 5225 |
| Ala Tyr Pro Leu Thr Lys His Pro Asn Gln Glu Tyr Ala Asp Val Phe |      |      |
|   | 5235 | 5240 |
| His Leu Tyr Leu Gln Tyr Ile Arg Lys Leu His Asp Glu Leu Thr Gly |      |      |
|   | 5250 | 5255 |
| His Met Leu Asp Met Tyr Ser Val Met Leu Thr Asn Asp Asn Thr Ser |      |      |
| 5265  | 5270 | 5275 |
| Arg Tyr Trp Glu Pro Glu Phe Tyr Glu Ala Met Tyr Thr Pro His Thr |      |      |
|   | 5285 | 5290 |
| Val Leu Gln Ala Val Gly Ala Cys Val Leu Cys Asn Ser Gln Thr Ser |      |      |
|   | 5300 | 5305 |
| Leu Arg Cys Gly Ala Cys Ile Arg Arg Pro Phe Leu Cys Cys Lys Cys |      |      |

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5315                      5320                      5325  
 Cys Tyr Asp His Val Ile Ser Thr Ser His Lys Leu Val Leu Ser Val  
   5330                      5335                      5340  
 Asn Pro Tyr Val Cys Asn Ala Pro Gly Cys Asp Val Thr Asp Val Thr  
   5345                      5350                      5355                      5360  
 Gln Leu Tyr Leu Gly Gly Met Ser Tyr Tyr Cys Lys Ser His Lys Pro  
                           5365                      5370                      5375  
 Pro Ile Ser Phe Pro Leu Cys Ala Asn Gly Gln Val Phe Gly Leu Tyr  
                           5380                      5385                      5390  
 Lys Asn Thr Cys Val Gly Ser Asp Asn Val Thr Asp Phe Asn Ala Ile  
                           5395                      5400                      5405  
 Ala Thr Cys Asp Trp Thr Asn Ala Gly Asp Tyr Ile Leu Ala Asn Thr  
                           5410                      5415                      5420  
 Cys Thr Glu Arg Leu Lys Leu Phe Ala Ala Glu Thr Leu Lys Ala Thr  
   5425                      5430                      5435                      5440  
 Glu Glu Thr Phe Lys Leu Ser Tyr Gly Ile Ala Thr Val Arg Glu Val  
                           5445                      5450                      5455  
 Leu Ser Asp Arg Glu Leu His Leu Ser Trp Glu Val Gly Lys Pro Arg  
                           5460                      5465                      5470  
 Pro Pro Leu Asn Arg Asn Tyr Val Phe Thr Gly Tyr Arg Val Thr Lys  
                           5475                      5480                      5485  
 Asn Ser Lys Val Gln Ile Gly Glu Tyr Thr Phe Glu Lys Gly Asp Tyr  
   5490                      5495                      5500  
 Gly Asp Ala Val Val Tyr Arg Gly Thr Thr Thr Tyr Lys Leu Asn Val  
   5505                      5510                      5515                      5520  
 Gly Asp Tyr Phe Val Leu Thr Ser His Thr Val Met Pro Leu Ser Ala  
                           5525                      5530                      5535  
 Pro Thr Leu Val Pro Gln Glu His Tyr Val Arg Ile Thr Gly Leu Tyr  
                           5540                      5545                      5550  
 Pro Thr Leu Asn Ile Ser Asp Glu Phe Ser Ser Asn Val Ala Asn Tyr  
                           5555                      5560                      5565  
 Gln Lys Val Gly Met Gln Lys Tyr Ser Thr Leu Gln Gly Pro Pro Gly  
   5570                      5575                      5580  
 Thr Gly Lys Ser His Phe Ala Ile Gly Leu Ala Leu Tyr Tyr Pro Ser  
   5585                      5590                      5595                      5600  
 Ala Arg Ile Val Tyr Thr Ala Cys Ser His Ala Ala Val Asp Ala Leu  
                           5605                      5610                      5615  
 Cys Glu Lys Ala Leu Lys Tyr Leu Pro Ile Asp Lys Cys Ser Arg Ile  
                           5620                      5625                      5630  
 Ile Pro Ala Arg Ala Arg Val Glu Cys Phe Asp Lys Phe Lys Val Asn  
                           5635                      5640                      5645  
 Ser Thr Leu Glu Gln Tyr Val Phe Cys Thr Val Asn Ala Leu Pro Glu

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|   |      |      |
|---|------|------|
| 5650  | 5655 | 5660 |
| Thr Thr Ala Asp Ile Val Val Phe Asp Glu Ile Ser Met Ala Thr Asn |      |      |
| 5665  | 5670 | 5675 |
| Tyr Asp Leu Ser Val Val Asn Ala Arg Leu Arg Ala Lys His Tyr Val |      |      |
|   | 5685 | 5690 |
| Tyr Ile Gly Asp Pro Ala Gln Leu Pro Ala Pro Arg Thr Leu Leu Thr |      |      |
|   | 5700 | 5705 |
| Lys Gly Thr Leu Glu Pro Glu Tyr Phe Asn Ser Val Cys Arg Leu Met |      |      |
|   | 5715 | 5720 |
| Lys Thr Ile Gly Pro Asp Met Phe Leu Gly Thr Cys Arg Arg Cys Pro |      |      |
|   | 5730 | 5735 |
| Ala Glu Ile Val Asp Thr Val Ser Ala Leu Val Tyr Asp Asn Lys Leu |      |      |
|   | 5745 | 5750 |
| Lys Ala His Lys Asp Lys Ser Ala Gln Cys Phe Lys Met Phe Tyr Lys |      |      |
|   | 5765 | 5770 |
| Gly Val Ile Thr His Asp Val Ser Ser Ala Ile Asn Arg Pro Gln Ile |      |      |
|   | 5780 | 5785 |
| Gly Val Val Arg Glu Phe Leu Thr Arg Asn Pro Ala Trp Arg Lys Ala |      |      |
|   | 5795 | 5800 |
| Val Phe Ile Ser Pro Tyr Asn Ser Gln Asn Ala Val Ala Ser Lys Ile |      |      |
|   | 5810 | 5815 |
| Leu Gly Leu Pro Thr Gln Thr Val Asp Ser Ser Gln Gly Ser Glu Tyr |      |      |
|   | 5825 | 5830 |
| Asp Tyr Val Ile Phe Thr Gln Thr Thr Glu Thr Ala His Ser Cys Asn |      |      |
|   | 5845 | 5850 |
| Val Asn Arg Phe Asn Val Ala Ile Thr Arg Ala Lys Ile Gly Ile Leu |      |      |
|   | 5860 | 5865 |
| Cys Ile Met Ser Asp Arg Asp Leu Tyr Asp Lys Leu Gln Phe Thr Ser |      |      |
|   | 5875 | 5880 |
| Leu Glu Ile Pro Arg Arg Asn Val Ala Thr Leu Gln Ala Glu Asn Val |      |      |
|   | 5890 | 5895 |
| Thr Gly Leu Phe Lys Asp Cys Ser Lys Ile Ile Thr Gly Leu His Pro |      |      |
|   | 5905 | 5910 |
| Thr Gln Ala Pro Thr His Leu Ser Val Asp Ile Lys Phe Lys Thr Glu |      |      |
|   | 5925 | 5930 |
| Gly Leu Cys Val Asp Ile Pro Gly Ile Pro Lys Asp Met Thr Tyr Arg |      |      |
|   | 5940 | 5945 |
| Arg Leu Ile Ser Met Met Gly Phe Lys Met Asn Tyr Gln Val Asn Gly |      |      |
|   | 5955 | 5960 |
| Tyr Pro Asn Met Phe Ile Thr Arg Glu Glu Ala Ile Arg His Val Arg |      |      |
|   | 5970 | 5975 |
| Ala Trp Ile Gly Phe Asp Val Glu Gly Cys His Ala Thr Arg Asp Ala |      |      |

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|                 |                     |                     |                         |
|-----------------|---------------------|---------------------|-------------------------|
| 5985            | 5990                | 5995                | 6000                    |
| Val Gly Thr Asn | Leu Pro Leu Gln Leu | Gly Phe Ser Thr Gly | Val Asn                 |
|                 | 6005                | 6010                | 6015                    |
| Leu Val Ala Val | Pro Thr Gly Tyr     | Val Asp Thr Glu     | Asn Thr Glu             |
|                 | 6020                | 6025                | 6030                    |
| Phe Thr Arg Val | Asn Ala Lys         | Pro Pro Pro Gly     | Asp Gln Phe Lys His     |
|                 | 6035                | 6040                | 6045                    |
| Leu Ile Pro Leu | Met Tyr Lys Gly     | Leu Pro Trp         | Asn Val Val Arg Ile     |
|                 | 6050                | 6055                | 6060                    |
| Lys Ile Val Gln | Met Leu Ser Asp Thr | Leu Lys Gly Leu     | Ser Asp Arg             |
| 6065            | 6070                | 6075                | 6080                    |
| Val Val Phe Val | Leu Trp Ala His     | Gly Phe Glu Leu     | Thr Ser Met Lys         |
|                 | 6085                | 6090                | 6095                    |
| Tyr Phe Val     | Lys Ile Gly Pro     | Glu Arg Thr Cys     | Cys Leu Cys Asp Lys     |
|                 | 6100                | 6105                | 6110                    |
| Arg Ala Thr Cys | Phe Ser Thr         | Ser Ser Asp Thr     | Tyr Ala Cys Trp Asn     |
|                 | 6115                | 6120                | 6125                    |
| His Ser Val Gly | Phe Asp Tyr Val     | Tyr Asn Pro         | Phe Met Ile Asp Val     |
|                 | 6130                | 6135                | 6140                    |
| Gln Gln Trp Gly | Phe Thr Gly Asn     | Leu Gln Ser         | Asn His Asp Gln His     |
| 6145            | 6150                | 6155                | 6160                    |
| Cys Gln Val His | Gly Asn Ala His     | Val Ala Ser Cys     | Asp Ala Ile Met         |
|                 | 6165                | 6170                | 6175                    |
| Thr Arg Cys     | Leu Ala Val His     | Glu Cys Phe Val     | Lys Arg Val Asp Trp     |
|                 | 6180                | 6185                | 6190                    |
| Ser Val Glu Tyr | Pro Ile Ile Gly     | Asp Glu Leu Arg     | Val Asn Ser Ala         |
|                 | 6195                | 6200                | 6205                    |
| Cys Arg Lys Val | Gln His Met Val     | Val Lys Ser         | Ala Leu Leu Ala Asp     |
|                 | 6210                | 6215                | 6220                    |
| Lys Phe Pro Val | Leu His Asp Ile     | Gly Asn Pro         | Lys Ala Ile Lys Cys     |
| 6225            | 6230                | 6235                | 6240                    |
| Val Pro Gln Ala | Glu Val Glu Trp     | Lys Phe Tyr Asp     | Ala Gln Pro Cys         |
|                 | 6245                | 6250                | 6255                    |
| Ser Asp Lys Ala | Tyr Lys Ile Glu     | Glu Leu Phe Tyr     | Ser Tyr Ala Thr         |
|                 | 6260                | 6265                | 6270                    |
| His His Asp Lys | Phe Thr Asp Gly     | Val Cys Leu Phe     | Trp Asn Cys Asn         |
|                 | 6275                | 6280                | 6285                    |
| Val Asp Arg Tyr | Pro Ala Asn         | Ala Ile Val         | Cys Arg Phe Asp Thr Arg |
|                 | 6290                | 6295                | 6300                    |
| Val Leu Ser Asn | Leu Asn Leu Pro     | Gly Cys Asp Gly     | Gly Ser Leu Tyr         |
| 6305            | 6310                | 6315                | 6320                    |
| Val Asn Lys His | Ala Phe His Thr     | Pro Ala Phe         | Asp Lys Ser Ala Phe     |

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|   |                                 |      |      |      |
|---|---------------------------------|------|------|------|
| 6325  |                                 | 6330 |      | 6335 |
| Thr Asn Leu Lys Gln Leu Pro Phe                                 | Phe Tyr Tyr Ser Asp Ser Pro Cys |      |      |      |
|   | 6340                            | 6345 | 6350 |      |
| Glu Ser His Gly Lys Gln Val Val Ser Asp Ile Asp Tyr Val Pro Leu |                                 |      |      |      |
|   | 6355                            | 6360 | 6365 |      |
| Lys Ser Ala Thr Cys Ile Thr Arg Cys Asn Leu Gly Gly Ala Val Cys |                                 |      |      |      |
|   | 6370                            | 6375 | 6380 |      |
| Arg His His Ala Asn Glu Tyr Arg Gln Tyr Leu Asp Ala Tyr Asn Met |                                 |      |      |      |
|   | 6385                            | 6390 | 6395 | 6400 |
| Met Ile Ser Ala Gly Phe Ser Leu Trp Ile Tyr Lys Gln Phe Asp Thr |                                 |      |      |      |
|   | 6405                            | 6410 | 6415 |      |
| Tyr Asn Leu Trp Asn Thr Phe Thr Arg Leu Gln Ser Leu Glu Asn Val |                                 |      |      |      |
|   | 6420                            | 6425 | 6430 |      |
| Ala Tyr Asn Val Val Asn Lys Gly His Phe Asp Gly His Ala Gly Glu |                                 |      |      |      |
|   | 6435                            | 6440 | 6445 |      |
| Ala Pro Val Ser Ile Ile Asn Asn Ala Val Tyr Thr Lys Val Asp Gly |                                 |      |      |      |
|   | 6450                            | 6455 | 6460 |      |
| Ile Asp Val Glu Ile Phe Glu Asn Lys Thr Thr Leu Pro Val Asn Val |                                 |      |      |      |
|   | 6465                            | 6470 | 6475 | 6480 |
| Ala Phe Glu Leu Trp Ala Lys Arg Asn Ile Lys Pro Val Pro Glu Ile |                                 |      |      |      |
|   | 6485                            | 6490 | 6495 |      |
| Lys Ile Leu Asn Asn Leu Gly Val Asp Ile Ala Ala Asn Thr Val Ile |                                 |      |      |      |
|   | 6500                            | 6505 | 6510 |      |
| Trp Asp Tyr Lys Arg Glu Ala Pro Ala His Val Ser Thr Ile Gly Val |                                 |      |      |      |
|   | 6515                            | 6520 | 6525 |      |
| Cys Thr Met Thr Asp Ile Ala Lys Lys Pro Thr Glu Ser Ala Cys Ser |                                 |      |      |      |
|   | 6530                            | 6535 | 6540 |      |
| Ser Leu Thr Val Leu Phe Asp Gly Arg Val Glu Gly Gln Val Asp Leu |                                 |      |      |      |
|   | 6545                            | 6550 | 6555 | 6560 |
| Phe Arg Asn Ala Arg Asn Gly Val Leu Ile Thr Glu Gly Ser Val Lys |                                 |      |      |      |
|   | 6565                            | 6570 | 6575 |      |
| Gly Leu Thr Pro Ser Lys Gly Pro Ala Gln Ala Ser Val Asn Gly Val |                                 |      |      |      |
|   | 6580                            | 6585 | 6590 |      |
| Thr Leu Ile Gly Glu Ser Val Lys Thr Gln Phe Asn Tyr Phe Lys Lys |                                 |      |      |      |
|   | 6595                            | 6600 | 6605 |      |
| Val Asp Gly Ile Ile Gln Gln Leu Pro Glu Thr Tyr Phe Thr Gln Ser |                                 |      |      |      |
|   | 6610                            | 6615 | 6620 |      |
| Arg Asp Leu Glu Asp Phe Lys Pro Arg Ser Gln Met Glu Thr Asp Phe |                                 |      |      |      |
|   | 6625                            | 6630 | 6635 | 6640 |
| Leu Glu Leu Ala Met Asp Glu Phe Ile Gln Arg Tyr Lys Leu Glu Gly |                                 |      |      |      |
|   | 6645                            | 6650 | 6655 |      |
| Tyr Ala Phe Glu His Ile Val Tyr Gly Asp Phe Ser His Gly Gln Leu |                                 |      |      |      |

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6660 6665 6670  
 Gly Gly Leu His Leu Met Ile Gly Leu Ala Lys Arg Ser Gln Asp Ser  
           6675                  6680          6685  
 Pro Leu Lys Leu Glu Asp Phe Ile Pro Met Asp Ser Thr Val Lys Asn  
       6690                  6695          6700  
 Tyr Phe Ile Thr Asp Ala Gln Thr Gly Ser Ser Lys Cys Val Cys Ser  
       6705                  6710          6715          6720  
 Val Ile Asp Leu Leu Leu Asp Asp Phe Val Glu Ile Ile Lys Ser Gln  
           6725                  6730          6735  
 Asp Leu Ser Val Ile Ser Lys Val Val Lys Val Thr Ile Asp Tyr Ala  
           6740                  6745          6750  
 Glu Ile Ser Phe Met Leu Trp Cys Lys Asp Gly His Val Glu Thr Phe  
           6755                  6760          6765  
 Tyr Pro Lys Leu Gln Ala Ser Arg Ala Trp Gln Pro Gly Val Ala Met  
       6770                  6775          6780  
 Pro Asn Leu Tyr Lys Met Gln Arg Met Leu Leu Glu Lys Cys Asp Leu  
       6785                  6790          6795          6800  
 Gln Asn Tyr Gly Glu Asn Ala Val Ile Pro Lys Gly Ile Met Met Asn  
           6805                  6810          6815  
 Val Ala Lys Tyr Thr Gln Leu Cys Gln Tyr Leu Asn Thr Leu Thr Leu  
           6820                  6825          6830  
 Ala Val Pro Tyr Asn Met Arg Val Ile His Phe Gly Ala Gly Ser Asp  
           6835                  6840          6845  
 Lys Gly Val Ala Pro Gly Thr Ala Val Leu Arg Gln Trp Leu Pro Thr  
       6850                  6855          6860  
 Gly Thr Leu Leu Val Asp Ser Asp Leu Asn Asp Phe Val Ser Asp Ala  
       6865                  6870          6875          6880  
 Tyr Ser Thr Leu Ile Gly Asp Cys Ala Thr Val His Thr Ala Asn Lys  
           6885                  6890          6895  
 Trp Asp Leu Ile Ile Ser Asp Met Tyr Asp Pro Arg Thr Lys His Val  
           6900                  6905  
 Thr Lys Glu Asn Asp Ser Lys Glu Gly Phe Phe Thr Tyr Leu Cys Gly  
       6915                  6920          6925  
 Phe Ile Lys Gln Lys Leu Ala Leu Gly Gly Ser Ile Ala Val Lys Ile  
       6930                  6935          6940  
 Thr Glu His Ser Trp Asn Ala Asp Leu Tyr Lys Leu Met Gly His Phe  
       6945                  6950          6955          6960  
 Ser Trp Trp Thr Ala Phe Val Thr Asn Val Asn Ala Ser Ser Ser Glu  
           6965                  6970          6975  
 Ala Phe Leu Ile Gly Ala Asn Tyr Leu Gly Lys Pro Lys Glu Gln Ile  
           6980                  6985          6990  
 Asp Gly Tyr Thr Met His Ala Asn Tyr Ile Phe Trp Arg Asn Thr Asn



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7005

6995

7000

Pro Ile Gln Leu Ser Ser Tyr Ser Leu Phe Asp Met Ser Lys Phe Pro  
7010 7015 7020  
Leu Lys Leu Arg Gly Thr Ala Val Met Ser Leu Lys Glu Asn Gln Ile  
7025 7030 7035  
Asn Asp Met Ile Tyr Ser Leu Leu Glu Lys Gly Arg Leu Ile Ile Arg  
7045 7050 7055  
Glu Asn Asn Arg Val Val Val Ser Ser Asp Ile Leu Val Asn Asn  
7060 7065 7070

<210> 7239  
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<212> PRT  
<213> SARS coronavirus

<220>  
<221> misc\_feature  
<222> 4376...4380  
<223> Xaa is any amino acid

<400> 7239  
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Ser Leu Pro Val Leu Gln Val Arg Asp Val Leu Val Arg Gly Phe Gly  
20 25 30  
Asp Ser Val Glu Glu Ala Leu Ser Glu Ala Arg Glu His Leu Lys Asn  
35 40 45  
Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val Leu Pro Gln Leu  
50 55 60  
Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala Leu Ser Thr Asn  
65 70 75 80  
His Gly His Lys Val Val Glu Leu Val Ala Glu Met Asp Gly Ile Gln  
85 90 95  
Tyr Gly Arg Ser Gly Ile Thr Leu Gly Val Leu Val Pro His Val Gly  
100 105 110  
Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg Lys Asn Gly Asn  
115 120 125  
Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu Lys Ser Tyr Asp  
130 135 140  
Leu Gly Asp Glu Leu Gly Thr Asp Pro Ile Glu Asp Tyr Glu Gln Asn  
145 150 155 160  
Trp Asn Thr Lys His Gly Ser Gly Ala Leu Arg Glu Leu Thr Arg Glu  
165 170 175  
Leu Asn Gly Gly Ala Val Thr Arg Tyr Val Asp Asn Asn Phe Cys Gly  
180 185 190  
Pro Asp Gly Tyr Pro Leu Asp Cys Ile Lys Asp Phe Leu Ala Arg Ala  
195 200 205

SEQLIST-20480.TXT

Gly Lys Ser Met Cys Thr Leu Ser Glu Gln Leu Asp Tyr Ile Glu Ser  
 210 215 220  
 Lys Arg Gly Val Tyr Cys Cys Arg Asp His Glu His Glu Ile Ala Trp  
 225 230 240  
 Phe Thr Glu Arg Ser Asp Lys Ser Tyr Glu His Gln Thr Pro Phe Glu  
 245 250 255  
 Ile Lys Ser Ala Lys Lys Phe Asp Thr Phe Lys Gly Glu Cys Pro Lys  
 260 265 270  
 Phe Val Phe Pro Leu Asn Ser Lys Val Lys Val Ile Gln Pro Arg Val  
 275 280 285  
 Glu Lys Lys Lys Thr Glu Gly Phe Met Gly Arg Ile Arg Ser Val Tyr  
 290 295 300  
 Pro Val Ala Ser Pro Gln Glu Cys Asn Asn Met His Leu Ser Thr Leu  
 305 310 315 320  
 Met Lys Cys Asn His Cys Asp Glu Val Ser Trp Gln Thr Cys Asp Phe  
 325 330 335  
 Leu Lys Ala Thr Cys Glu His Cys Gly Thr Glu Asn Leu Val Ile Glu  
 340 345 350  
 Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met  
 355 360 365  
 Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val  
 370 375 380  
 Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly  
 385 390 395 400  
 Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys  
 405 410 415  
 Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly  
 420 425 430  
 Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu  
 435 440 445  
 Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val  
 450 455 460  
 Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe  
 465 470 475 480  
 Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr  
 485 490 495  
 Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr  
 500 505 510  
 Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser  
 515 520 525  
 Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala Ala Gly Val Ile  
 530 535 540

SEQLIST-20480.TXT

Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pro  
 545 550 555 560  
 Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln  
 565 570 575  
 Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser Asp Leu Leu Thr  
 580 585 590  
 Asn Ser Val Ile Ile Met Ala Tyr Val Thr Gly Gly Leu Val Gln Gln  
 595 600 605  
 Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr Val Glu Lys Leu  
 610 615 620  
 Arg Pro Ile Phe Glu Trp Ile Glu Ala Lys Leu Ser Ala Gly Val Glu  
 625 630 635 640  
 Phe Leu Lys Asp Ala Trp Glu Ile Leu Lys Phe Leu Ile Thr Gly Val  
 645 650 655  
 Phe Asp Ile Val Lys Gly Gln Ile Gln Val Ala Ser Asp Asn Ile Lys  
 660 665 670  
 Asp Cys Val Lys Cys Phe Ile Asp Val Val Asn Lys Ala Leu Glu Met  
 675 680 685  
 Cys Ile Asp Gln Val Thr Ile Ala Gly Ala Lys Leu Arg Ser Leu Asn  
 690 695 700  
 Leu Gly Glu Val Phe Ile Ala Gln Ser Lys Gly Leu Tyr Arg Gln Cys  
 705 710 715 720  
 Ile Arg Gly Lys Glu Gln Leu Gln Leu Leu Met Pro Leu Lys Ala Pro  
 725 730 735  
 Lys Glu Val Thr Phe Leu Glu Gly Asp Ser His Asp Thr Val Leu Thr  
 740 745 750  
 Ser Glu Glu Val Val Leu Lys Asn Gly Glu Leu Glu Ala Leu Glu Thr  
 755 760 765  
 Pro Val Asp Ser Phe Thr Asn Gly Ala Ile Val Gly Thr Pro Val Cys  
 770 775 780  
 Val Asn Gly Leu Met Leu Leu Glu Ile Lys Asp Lys Glu Gln Tyr Cys  
 785 790 795 800  
 Ala Leu Ser Pro Gly Leu Leu Ala Thr Asn Asn Val Phe Arg Leu Lys  
 805 810 815  
 Gly Gly Ala Pro Ile Lys Gly Val Thr Phe Gly Glu Asp Thr Val Trp  
 820 825 830  
 Glu Val Gln Gly Tyr Lys Asn Val Arg Ile Thr Phe Glu Leu Asp Glu  
 835 840 845  
 Arg Val Asp Lys Val Leu Asn Glu Lys Cys Ser Val Tyr Thr Val Glu  
 850 855 860  
 Ser Gly Thr Glu Val Thr Glu Phe Ala Cys Val Val Ala Glu Ala Val  
 865 870 875 880

SEQLIST-20480.TXT

Val Lys Thr Leu Gln Pro Val Ser Asp Leu Leu Thr Asn Met Gly Ile  
 885 890 895  
 Asp Leu Asp Glu Trp Ser Val Ala Thr Phe Tyr Leu Phe Asp Asp Ala  
 900 905 910  
 Gly Glu Glu Asn Phe Ser Ser Arg Met Tyr Cys Ser Phe Tyr Pro Pro  
 915 920 925  
 Asp Glu Glu Glu Glu Asp Asp Ala Glu Cys Glu Glu Glu Ile Asp  
 930 935 940  
 Glu Thr Cys Glu His Glu Tyr Gly Thr Glu Asp Asp Tyr Gln Gly Leu  
 945 950 955 960  
 Pro Leu Glu Phe Gly Ala Ser Ala Glu Thr Val Arg Val Glu Glu Glu  
 965 970 975  
 Glu Glu Glu Asp Trp Leu Asp Asp Thr Thr Glu Gln Ser Glu Ile Glu  
 980 985 990  
 Pro Glu Pro Glu Pro Thr Pro Glu Glu Pro Val Asn Gln Phe Thr Gly  
 995 1000 1005  
 Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Ile Val  
 1010 1015 1020  
 Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala Ala Asn  
 1025 1030 1035 1040  
 Ile His Leu Lys His Gly Gly Gly Val Ala Gly Ala Leu Asn Lys Ala  
 1045 1050 1055  
 Thr Asn Gly Ala Met Gln Lys Glu Ser Asp Asp Tyr Ile Lys Leu Asn  
 1060 1065 1070  
 Gly Pro Leu Thr Val Gly Gly Ser Cys Leu Leu Ser Gly His Asn Leu  
 1075 1080 1085  
 Ala Lys Lys Cys Leu His Val Val Gly Pro Asn Leu Asn Ala Gly Glu  
 1090 1095 1100  
 Asp Ile Gln Leu Leu Lys Ala Ala Tyr Glu Asn Phe Asn Ser Gln Asp  
 1105 1110 1115 1120  
 Ile Leu Leu Ala Pro Leu Leu Ser Ala Gly Ile Phe Gly Ala Lys Pro  
 1125 1130 1135  
 Leu Gln Ser Leu Gln Val Cys Val Gln Thr Val Arg Thr Gln Val Tyr  
 1140 1145 1150  
 Ile Ala Val Asn Asp Lys Ala Leu Tyr Glu Gln Val Val Met Asp Tyr  
 1155 1160 1165  
 Leu Asp Asn Leu Lys Pro Arg Val Glu Ala Pro Lys Gln Glu Glu Pro  
 1170 1175 1180  
 Pro Asn Thr Glu Asp Ser Lys Thr Glu Glu Lys Ser Val Val Gln Lys  
 1185 1190 1195 1200  
 Pro Val Asp Val Lys Pro Lys Ile Lys Ala Cys Ile Asp Glu Val Thr  
 1205 1210 1215

SEQLIST-20480.TXT

Thr Thr Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys Leu Leu Leu Phe  
 1220 1225 1230  
 Ala Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln Asn Met Leu Arg  
 1235 1240 1245  
 Gly Glu Asp Met Ser Phe Leu Glu Lys Asp Ala Pro Tyr Met Val Gly  
 1250 1255 1260  
 Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val Ile Pro Ser Lys  
 1265 1270 1275 1280  
 Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala Leu Lys Lys Val  
 1285 1290 1295  
 Pro Val Asp Glu Tyr Ile Thr Thr Tyr Pro Gly Gln Gly Cys Ala Gly  
 1300 1305 1310  
 Tyr Thr Leu Glu Glu Ala Lys Thr Ala Leu Lys Lys Cys Lys Ser Ala  
 1315 1320 1325  
 Phe Tyr Val Leu Pro Ser Glu Ala Pro Asn Ala Lys Glu Glu Ile Leu  
 1330 1335 1340  
 Gly Thr Val Ser Trp Asn Leu Arg Glu Met Leu Ala His Ala Glu Glu  
 1345 1350 1355 1360  
 Thr Arg Lys Leu Met Pro Ile Cys Met Asp Val Arg Ala Ile Met Ala  
 1365 1370 1375  
 Thr Ile Gln Arg Lys Tyr Lys Gly Ile Lys Ile Gln Glu Gly Ile Val  
 1380 1385 1390  
 Asp Tyr Gly Val Arg Phe Phe Phe Tyr Thr Ser Lys Glu Pro Val Ala  
 1395 1400 1405  
 Ser Ile Ile Thr Lys Leu Asn Ser Leu Asn Glu Pro Leu Val Thr Met  
 1410 1415 1420  
 Pro Ile Gly Tyr Val Thr His Gly Phe Asn Leu Glu Glu Ala Ala Arg  
 1425 1430 1435 1440  
 Cys Met Arg Ser Leu Lys Ala Pro Ala Val Val Ser Val Ser Ser Pro  
 1445 1450 1455  
 Asp Ala Val Thr Thr Tyr Asn Gly Tyr Leu Thr Ser Ser Ser Lys Thr  
 1460 1465 1470  
 Ser Glu Glu His Phe Val Glu Thr Val Ser Leu Ala Gly Ser Tyr Arg  
 1475 1480 1485  
 Asp Trp Ser Tyr Ser Gly Gln Arg Thr Glu Leu Gly Val Glu Phe Leu  
 1490 1495 1500  
 Lys Arg Gly Asp Lys Ile Val Tyr His Thr Leu Glu Ser Pro Val Glu  
 1505 1510 1515 1520  
 Phe His Leu Asp Gly Glu Val Leu Ser Leu Asp Lys Leu Lys Ser Leu  
 1525 1530 1535  
 Leu Ser Leu Arg Glu Val Lys Thr Ile Lys Val Phe Thr Thr Val Asp  
 1540 1545 1550

SEQLIST-20480.TXT

Asn Thr Asn Leu His Thr Gln Leu Val Asp Met Ser Met Thr Tyr Gly  
 1555 1560 1565  
 Gln Gln Phe Gly Pro Thr Tyr Leu Asp Gly Ala Asp Val Thr Lys Ile  
 1570 1575 1580  
 Lys Pro His Val Asn His Glu Gly Lys Thr Phe Phe Val Leu Pro Ser  
 1585 1590 1595 1600  
 Asp Asp Thr Leu Arg Ser Glu Ala Phe Glu Tyr Tyr His Thr Leu Asp  
 1605 1610 1615  
 Glu Ser Phe Leu Gly Arg Tyr Met Ser Ala Leu Asn His Thr Lys Lys  
 1620 1625 1630  
 Trp Lys Phe Pro Gln Val Gly Gly Leu Thr Ser Ile Lys Trp Ala Asp  
 1635 1640 1645  
 Asn Asn Cys Tyr Leu Ser Ser Val Leu Leu Ala Leu Gln Gln Leu Glu  
 1650 1655 1660  
 Val Lys Phe Asn Ala Pro Ala Leu Gln Glu Ala Tyr Tyr Arg Ala Arg  
 1665 1670 1675 1680  
 Ala Gly Asp Ala Ala Asn Phe Cys Ala Leu Ile Leu Ala Tyr Ser Asn  
 1685 1690 1695  
 Lys Thr Val Gly Glu Leu Gly Asp Val Arg Glu Thr Met Thr His Leu  
 1700 1705 1710  
 Leu Gln His Ala Asn Leu Glu Ser Ala Lys Arg Val Leu Asn Val Val  
 1715 1720 1725  
 Cys Lys His Cys Gly Gln Lys Thr Thr Thr Leu Thr Gly Val Glu Ala  
 1730 1735 1740  
 Val Met Tyr Met Gly Thr Leu Ser Tyr Asp Asn Leu Lys Thr Gly Val  
 1745 1750 1755 1760  
 Ser Ile Pro Cys Val Cys Gly Arg Asp Ala Thr Gln Tyr Leu Val Gln  
 1765 1770 1775  
 Gln Glu Ser Ser Phe Val Met Met Ser Ala Pro Pro Ala Glu Tyr Lys  
 1780 1785 1790  
 Leu Gln Gln Gly Thr Phe Leu Cys Ala Asn Glu Tyr Thr Gly Asn Tyr  
 1795 1800 1805  
 Gln Cys Gly His Tyr Thr His Ile Thr Ala Lys Glu Thr Leu Tyr Arg  
 1810 1815 1820  
 Ile Asp Gly Ala His Leu Thr Lys Met Ser Glu Tyr Lys Gly Pro Val  
 1825 1830 1835 1840  
 Thr Asp Val Phe Tyr Lys Glu Thr Ser Tyr Thr Thr Thr Ile Lys Pro  
 1845 1850 1855  
 Val Ser Tyr Lys Leu Asp Gly Val Thr Tyr Thr Glu Ile Glu Pro Lys  
 1860 1865 1870  
 Leu Asp Gly Tyr Tyr Lys Lys Asp Asn Ala Tyr Tyr Thr Glu Gln Pro  
 1875 1880 1885

SEQLIST-20480.TXT

Ile Asp Leu Val Pro Thr Gln Pro Leu Pro Asn Ala Ser Phe Asp Asn  
1890 1895 1900

Phe Lys Leu Thr Cys Ser Asn Thr Lys Phe Ala Asp Asp Leu Asn Gln  
1905 1910 1915 1920

Met Thr Gly Phe Thr Lys Pro Ala Ser Arg Glu Leu Ser Val Thr Phe  
1925 1930 1935

Phe Pro Asp Leu Asn Gly Asp Val Val Ala Ile Asp Tyr Arg His Tyr  
1940 1945 1950

Ser Ala Ser Phe Lys Lys Gly Ala Lys Leu Leu His Lys Pro Ile Val  
1955 1960 1965

Trp His Ile Asn Gln Ala Thr Thr Lys Thr Thr Phe Lys Pro Asn Thr  
1970 1975 1980

Trp Cys Leu Arg Cys Leu Trp Ser Thr Lys Pro Val Asp Thr Ser Asn  
1985 1990 1995 2000

Ser Phe Glu Val Leu Ala Val Glu Asp Thr Gln Gly Met Asp Asn Leu  
2005 2010 2015

Ala Cys Glu Ser Gln Gln Pro Thr Ser Glu Glu Val Val Glu Asn Pro  
2020 2025 2030

Thr Ile Gln Lys Glu Val Ile Glu Cys Asp Val Lys Thr Thr Glu Val  
2035 2040 2045

Val Gly Asn Val Ile Leu Lys Pro Ser Asp Glu Gly Val Lys Val Thr  
2050 2055 2060

Gln Glu Leu Gly His Glu Asp Leu Met Ala Ala Tyr Val Glu Asn Thr  
2065 2070 2075 2080

Ser Ile Thr Ile Lys Lys Pro Asn Glu Leu Ser Leu Ala Leu Gly Leu  
2085 2090 2095

Lys Thr Ile Ala Thr His Gly Ile Ala Ala Ile Asn Ser Val Pro Trp  
2100 2105 2110

Ser Lys Ile Leu Ala Tyr Val Lys Pro Phe Leu Gly Gln Ala Ala Ile  
2115 2120 2125

Thr Thr Ser Asn Cys Ala Lys Arg Leu Ala Gln Arg Val Phe Asn Asn  
2130 2135 2140

Tyr Met Pro Tyr Val Phe Thr Leu Leu Phe Gln Leu Cys Thr Phe Thr  
2145 2150 2155 2160

Lys Ser Thr Asn Ser Arg Ile Arg Ala Ser Leu Pro Thr Thr Ile Ala  
2165 2170 2175

Lys Asn Ser Val Lys Ser Val Ala Lys Leu Cys Leu Asp Ala Gly Ile  
2180 2185 2190

Asn Tyr Val Lys Ser Pro Lys Phe Ser Lys Leu Phe Thr Ile Ala Met  
2195 2200 2205

Trp Leu Leu Leu Leu Ser Ile Cys Leu Gly Ser Leu Ile Cys Val Thr  
2210 2215 2220

SEQLIST-20480.TXT

Ala Ala Phe Gly Val Leu Leu Ser Asn Phe Gly Ala Pro Ser Tyr Cys  
2225 2230 2235 2240

Asn Gly Val Arg Glu Leu Tyr Leu Asn Ser Ser Asn Val Thr Thr Met  
2245 2250 2255

Asp Phe Cys Glu Gly Ser Phe Pro Cys Ser Ile Cys Leu Ser Gly Leu  
2260 2265 2270

Asp Ser Leu Asp Ser Tyr Pro Ala Leu Glu Thr Ile Gln Val Thr Ile  
2275 2280 2285

Ser Ser Tyr Lys Leu Asp Leu Thr Ile Leu Gly Leu Ala Ala Glu Trp  
2290 2295 2300

Val Leu Ala Tyr Met Leu Phe Thr Lys Phe Phe Tyr Leu Leu Gly Leu  
2305 2310 2315 2320

Ser Ala Ile Met Gln Val Phe Phe Gly Tyr Phe Ala Ser His Phe Ile  
2325 2330 2335

Ser Asn Ser Trp Leu Met Trp Phe Ile Ile Ser Ile Val Gln Met Ala  
2340 2345 2350

Pro Val Ser Ala Met Val Arg Met Tyr Ile Phe Phe Ala Ser Phe Tyr  
2355 2360 2365

Tyr Ile Trp Lys Ser Tyr Val His Ile Met Asp Gly Cys Thr Ser Ser  
2370 2375 2380

Thr Cys Met Met Cys Tyr Lys Arg Asn Arg Ala Thr Arg Val Glu Cys  
2385 2390 2395 2400

Thr Thr Ile Val Asn Gly Met Lys Arg Ser Phe Tyr Val Tyr Ala Asn  
2405 2410 2415

Gly Gly Arg Gly Phe Cys Lys Thr His Asn Trp Asn Cys Leu Asn Cys  
2420 2425 2430

Asp Thr Phe Cys Thr Gly Ser Thr Phe Ile Ser Asp Glu Val Ala Arg  
2435 2440 2445

Asp Leu Ser Leu Gln Phe Lys Arg Pro Ile Asn Pro Thr Asp Gln Ser  
2450 2455 2460

Ser Tyr Ile Val Asp Ser Val Ala Val Lys Asn Gly Ala Leu His Leu  
2465 2470 2475 2480

Tyr Phe Asp Lys Ala Gly Gln Lys Thr Tyr Glu Arg His Pro Leu Ser  
2485 2490 2495

His Phe Val Asn Leu Asp Asn Leu Arg Ala Asn Asn Thr Lys Gly Ser  
2500 2505 2510

Leu Pro Ile Asn Val Ile Val Phe Asp Gly Lys Ser Lys Cys Asp Glu  
2515 2520 2525

Ser Ala Ser Lys Ser Ala Ser Val Tyr Tyr Ser Gln Leu Met Cys Gln  
2530 2535 2540

Pro Ile Leu Leu Leu Asp Gln Ala Leu Val Ser Asp Val Gly Asp Ser  
2545 2550 2555 2560



SEQLIST-20480.TXT

Thr Glu Val Ser Val Lys Met Phe Asp Ala Tyr Val Asp Thr Phe Ser  
 2565 2570 2575  
 Ala Thr Phe Ser Val Pro Met Glu Lys Leu Lys Ala Leu Val Ala Thr  
 2580 2585 2590  
 Ala His Ser Glu Leu Ala Lys Gly Val Ala Leu Asp Gly Val Leu Ser  
 2595 2600 2605  
 Thr Phe Val Ser Ala Ala Arg Gln Gly Val Val Asp Thr Asp Val Asp  
 2610 2615 2620  
 Thr Lys Asp Val Ile Glu Cys Leu Lys Leu Ser His His Ser Asp Leu  
 2625 2630 2635 2640  
 Glu Val Thr Gly Asp Ser Cys Asn Asn Phe Met Leu Thr Tyr Asn Lys  
 2645 2650 2655  
 Val Glu Asn Met Thr Pro Arg Asp Leu Gly Ala Cys Ile Asp Cys Asn  
 2660 2665 2670  
 Ala Arg His Ile Asn Ala Gln Val Ala Lys Ser His Asn Val Ser Leu  
 2675 2680 2685  
 Ile Trp Asn Val Lys Asp Tyr Met Ser Leu Ser Glu Gln Leu Arg Lys  
 2690 2695 2700  
 Gln Ile Arg Ser Ala Ala Lys Lys Asn Asn Ile Pro Phe Arg Leu Thr  
 2705 2710 2715 2720  
 Cys Ala Thr Thr Arg Gln Val Val Asn Val Ile Thr Thr Lys Ile Ser  
 2725 2730 2735  
 Leu Lys Gly Gly Lys Ile Val Ser Thr Cys Phe Lys Leu Met Leu Lys  
 2740 2745 2750  
 Ala Thr Leu Leu Cys Val Leu Ala Ala Leu Val Cys Tyr Ile Val Met  
 2755 2760 2765  
 Pro Val His Thr Leu Ser Ile His Asp Gly Tyr Thr Asn Glu Ile Ile  
 2770 2775 2780  
 Gly Tyr Lys Ala Ile Gln Asp Gly Val Thr Arg Asp Ile Ile Ser Thr  
 2785 2790 2795 2800  
 Asp Asp Cys Phe Ala Asn Lys His Ala Gly Phe Asp Ala Trp Phe Ser  
 2805 2810 2815  
 Gln Arg Gly Gly Ser Tyr Lys Asn Asp Lys Ser Cys Pro Val Val Ala  
 2820 2825 2830  
 Ala Ile Ile Thr Arg Glu Ile Gly Phe Ile Val Pro Gly Leu Pro Gly  
 2835 2840 2845  
 Thr Val Leu Arg Ala Ile Asn Gly Asp Phe Leu His Phe Leu Pro Arg  
 2850 2855 2860  
 Val Phe Ser Ala Val Gly Asn Ile Cys Tyr Thr Pro Ser Lys Leu Ile  
 2865 2870 2875 2880  
 Glu Tyr Ser Asp Phe Ala Thr Ser Ala Cys Val Leu Ala Ala Glu Cys  
 2885 2890 2895

SEQLIST-20480.TXT

Thr Ile Phe Lys Asp Ala Met Gly Lys Pro Val Pro Tyr Cys Tyr Asp  
2900 2905 2910

Thr Asn Leu Leu Glu Gly Ser Ile Ser Tyr Ser Glu Leu Arg Pro Asp  
2915 2920 2925

Thr Arg Tyr Val Leu Met Asp Gly Ser Ile Ile Gln Phe Pro Asn Thr  
2930 2935 2940

Tyr Leu Glu Gly Ser Val Arg Val Val Thr Thr Phe Asp Ala Glu Tyr  
2945 2950 2955 2960

Cys Arg His Gly Thr Cys Glu Arg Ser Glu Val Gly Ile Cys Leu Ser  
2965 2970 2975

Thr Ser Gly Arg Trp Val Leu Asn Asn Glu His Tyr Arg Ala Leu Ser  
2980 2985 2990

Gly Val Phe Cys Gly Val Asp Ala Met Asn Leu Ile Ala Asn Ile Phe  
2995 3000 3005

Thr Pro Leu Val Gln Pro Val Gly Ala Leu Asp Val Ser Ala Ser Val  
3010 3015 3020

Val Ala Gly Gly Ile Ile Ala Ile Leu Val Thr Cys Ala Ala Tyr Tyr  
3025 3030 3035 3040

Phe Met Lys Phe Arg Arg Val Phe Gly Glu Tyr Asn His Val Val Ala  
3045 3050 3055

Ala Asn Ala Leu Leu Phe Leu Met Ser Phe Thr Ile Leu Cys Leu Val  
3060 3065 3070

Pro Ala Tyr Ser Phe Leu Pro Gly Val Tyr Ser Val Phe Tyr Leu Tyr  
3075 3080 3085

Leu Thr Phe Tyr Phe Thr Asn Asp Val Ser Phe Leu Ala His Leu Gln  
3090 3095 3100

Trp Phe Ala Met Phe Ser Pro Ile Val Pro Phe Trp Ile Thr Ala Ile  
3105 3110 3115 3120

Tyr Val Phe Cys Ile Ser Leu Lys His Cys His Trp Phe Phe Asn Asn  
3125 3130 3135

Tyr Leu Arg Lys Arg Val Met Phe Asn Gly Val Thr Phe Ser Thr Phe  
3140 3145 3150

Glu Glu Ala Ala Leu Cys Thr Phe Leu Leu Asn Lys Glu Met Tyr Leu  
3155 3160 3165

Lys Leu Arg Ser Glu Thr Leu Leu Pro Leu Thr Gln Tyr Asn Arg Tyr  
3170 3175 3180

Leu Ala Leu Tyr Asn Lys Tyr Lys Tyr Phe Ser Gly Ala Leu Asp Thr  
3185 3190 3195 3200

Thr Ser Tyr Arg Glu Ala Ala Cys Cys His Leu Ala Lys Ala Leu Asn  
3205 3210 3215

Asp Phe Ser Asn Ser Gly Ala Asp Val Leu Tyr Gln Pro Pro Gln Thr  
3220 3225 3230

SEQLIST-20480.TXT

Ser Ile Thr Ser Ala Val Leu Gln Ser Gly Phe Arg Lys Met Ala Phe  
3235 3240 3245

Pro Ser Gly Lys Val Glu Gly Cys Met Val Gln Val Thr Cys Gly Thr  
3250 3255 3260

Thr Thr Leu Asn Gly Leu Trp Leu Asp Asp Thr Val Tyr Cys Pro Arg  
3265 3270 3275 3280

His Val Ile Cys Thr Ala Glu Asp Met Leu Asn Pro Asn Tyr Glu Asp  
3285 3290 3295

Leu Leu Ile Arg Lys Ser Asn His Ser Phe Leu Val Gln Ala Gly Asn  
3300 3305 3310

Val Gln Leu Arg Val Ile Gly His Ser Met Gln Asn Cys Leu Leu Arg  
3315 3320 3325

Leu Lys Val Asp Thr Ser Asn Pro Lys Thr Pro Lys Tyr Lys Phe Val  
3330 3335 3340

Arg Ile Gln Pro Gly Gln Thr Phe Ser Val Leu Ala Cys Tyr Asn Gly  
3345 3350 3355 3360

Ser Pro Ser Gly Val Tyr Gln Cys Ala Met Arg Pro Asn His Thr Ile  
3365 3370 3375

Lys Gly Ser Phe Leu Asn Gly Ser Cys Gly Ser Val Gly Phe Asn Ile  
3380 3385 3390

Asp Tyr Asp Cys Val Ser Phe Cys Tyr Met His His Met Glu Leu Pro  
3395 3400 3405

Thr Gly Val His Ala Gly Thr Asp Leu Glu Gly Lys Phe Tyr Gly Pro  
3410 3415 3420

Phe Val Asp Arg Gln Thr Ala Gln Ala Ala Gly Thr Asp Thr Thr Ile  
3425 3430 3435 3440

Thr Leu Asn Val Leu Ala Trp Leu Tyr Ala Ala Val Ile Asn Gly Asp  
3445 3450 3455

Arg Trp Phe Leu Asn Arg Phe Thr Thr Thr Leu Asn Asp Phe Asn Leu  
3460 3465 3470

Val Ala Met Lys Tyr Asn Tyr Glu Pro Leu Thr Gln Asp His Val Asp  
3475 3480 3485

Ile Leu Gly Pro Leu Ser Ala Gln Thr Gly Ile Ala Val Leu Asp Met  
3490 3495 3500

Cys Ala Ala Leu Lys Glu Leu Leu Gln Asn Gly Met Asn Gly Arg Thr  
3505 3510 3515 3520

Ile Leu Gly Ser Thr Ile Leu Glu Asp Glu Phe Thr Pro Phe Asp Val  
3525 3530 3535

Val Arg Gln Cys Ser Gly Val Thr Phe Gln Gly Lys Phe Lys Lys Ile  
3540 3545 3550

Val Lys Gly Thr His His Trp Met Leu Leu Thr Phe Leu Thr Ser Leu  
3555 3560 3565

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Leu Ile Leu Val Gln Ser Thr Gln Trp Ser Leu Phe Phe Phe Val Tyr  
 3570 3575 3580  
 Glu Asn Ala Phe Leu Pro Phe Thr Leu Gly Ile Met Ala Ile Ala Ala  
 3585 3590 3595 3600  
 Cys Ala Met Leu Leu Val Lys His Lys His Ala Phe Leu Cys Leu Phe  
 3605 3610 3615  
 Leu Leu Pro Ser Leu Ala Thr Val Ala Tyr Phe Asn Met Val Tyr Met  
 3620 3625 3630  
 Pro Ala Ser Trp Val Met Arg Ile Met Thr Trp Leu Glu Leu Ala Asp  
 3635 3640 3645  
 Thr Ser Leu Ser Gly Tyr Arg Leu Lys Asp Cys Val Met Tyr Ala Ser  
 3650 3655 3660  
 Ala Leu Val Leu Leu Ile Leu Met Thr Ala Arg Thr Val Tyr Asp Asp  
 3665 3670 3675 3680  
 Ala Ala Arg Arg Val Trp Thr Leu Met Asn Val Ile Thr Leu Val Tyr  
 3685 3690 3695  
 Lys Val Tyr Tyr Gly Asn Ala Leu Asp Gln Ala Ile Ser Met Trp Ala  
 3700 3705 3710  
 Leu Val Ile Ser Val Thr Ser Asn Tyr Ser Gly Val Val Thr Thr Ile  
 3715 3720 3725  
 Met Phe Leu Ala Arg Ala Ile Val Phe Val Cys Val Glu Tyr Tyr Pro  
 3730 3735 3740  
 Leu Leu Phe Ile Thr Gly Asn Thr Leu Gln Cys Ile Met Leu Val Tyr  
 3745 3750 3755 3760  
 Cys Phe Leu Gly Tyr Cys Cys Cys Cys Tyr Phe Gly Leu Phe Cys Leu  
 3765 3770 3775  
 Leu Asn Arg Tyr Phe Arg Leu Thr Leu Gly Val Tyr Asp Tyr Leu Val  
 3780 3785 3790  
 Ser Thr Gln Glu Phe Arg Tyr Met Asn Ser Gln Gly Leu Leu Pro Pro  
 3795 3800 3805  
 Lys Ser Ser Ile Asp Ala Phe Lys Leu Asn Ile Lys Leu Leu Gly Ile  
 3810 3815 3820  
 Gly Gly Lys Pro Cys Ile Lys Val Ala Thr Val Gln Ser Lys Met Ser  
 3825 3830 3835 3840  
 Asp Val Lys Cys Thr Ser Val Val Leu Leu Ser Val Leu Gln Gln Leu  
 3845 3850 3855  
 Arg Val Glu Ser Ser Ser Lys Leu Trp Ala Gln Cys Val Gln Leu His  
 3860 3865 3870  
 Asn Asp Ile Leu Leu Ala Lys Asp Thr Thr Glu Ala Phe Glu Lys Met  
 3875 3880 3885  
 Val Ser Leu Leu Ser Val Leu Leu Ser Met Gln Gly Ala Val Asp Ile  
 3890 3895 3900

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Asn Arg Leu Cys Glu Glu Met Leu Asp Asn Arg Ala Thr Leu Gln Ala  
 3905 3910 3915 3920  
 Ile Ala Ser Glu Phe Ser Ser Leu Pro Ser Tyr Ala Ala Tyr Ala Thr  
 3925 3930 3935  
 Ala Gln Glu Ala Tyr Glu Gln Ala Val Ala Asn Gly Asp Ser Glu Val  
 3940 3945 3950  
 Val Leu Lys Lys Leu Lys Lys Ser Leu Asn Val Ala Lys Ser Glu Phe  
 3955 3960 3965  
 Asp Arg Asp Ala Ala Met Gln Arg Lys Leu Glu Lys Met Ala Asp Gln  
 3970 3975 3980  
 Ala Met Thr Gln Met Tyr Lys Gln Ala Arg Ser Glu Asp Lys Arg Ala  
 3985 3990 3995 4000  
 Lys Val Thr Ser Ala Met Gln Thr Met Leu Phe Thr Met Leu Arg Lys  
 4005 4010 4015  
 Leu Asp Asn Asp Ala Leu Asn Asn Ile Ile Asn Asn Ala Arg Asp Gly  
 4020 4025 4030  
 Cys Val Pro Leu Asn Ile Ile Pro Leu Thr Thr Ala Ala Lys Leu Met  
 4035 4040 4045  
 Val Val Val Pro Asp Tyr Gly Thr Tyr Lys Asn Thr Cys Asp Gly Asn  
 4050 4055 4060  
 Thr Phe Thr Tyr Ala Ser Ala Leu Trp Glu Ile Gln Gln Val Val Asp  
 4065 4070 4075 4080  
 Ala Asp Ser Lys Ile Val Gln Leu Ser Glu Ile Asn Met Asp Asn Ser  
 4085 4090 4095  
 Pro Asn Leu Ala Trp Pro Leu Ile Val Thr Ala Leu Arg Ala Asn Ser  
 4100 4105 4110  
 Ala Val Lys Leu Gln Asn Asn Glu Leu Ser Pro Val Ala Leu Arg Gln  
 4115 4120 4125  
 Met Ser Cys Ala Ala Gly Thr Thr Gln Thr Ala Cys Thr Asp Asp Asn  
 4130 4135 4140  
 Ala Leu Ala Tyr Tyr Asn Asn Ser Lys Gly Gly Arg Phe Val Leu Ala  
 4145 4150 4155 4160  
 Leu Leu Ser Asp His Gln Asp Leu Lys Trp Ala Arg Phe Pro Lys Ser  
 4165 4170 4175  
 Asp Gly Thr Gly Thr Ile Tyr Thr Glu Leu Glu Pro Pro Cys Arg Phe  
 4180 4185 4190  
 Val Thr Asp Thr Pro Lys Gly Pro Lys Val Lys Tyr Leu Tyr Phe Ile  
 4195 4200 4205  
 Lys Gly Leu Asn Asn Leu Asn Arg Gly Met Val Leu Gly Ser Leu Ala  
 4210 4215 4220  
 Ala Thr Val Arg Leu Gln Ala Gly Asn Ala Thr Glu Val Pro Ala Asn  
 4225 4230 4235 4240

SEQLIST-20480.TXT

Ser Thr Val Leu Ser Phe Cys Ala Phe Ala Val Asp Pro Ala Lys Ala  
4245 4250 4255

Tyr Lys Asp Tyr Leu Ala Ser Gly Gly Gln Pro Ile Thr Asn Cys Val  
4260 4265 4270

Lys Met Leu Cys Thr His Thr Gly Thr Gly Gln Ala Ile Thr Val Thr  
4275 4280 4285

Pro Glu Ala Asn Met Asp Gln Glu Ser Phe Gly Gly Ala Ser Cys Cys  
4290 4295 4300

Leu Tyr Cys Arg Cys His Ile Asp His Pro Asn Pro Lys Gly Phe Cys  
4305 4310 4315 4320

Asp Leu Lys Gly Lys Tyr Val Gln Ile Pro Thr Thr Cys Ala Asn Asp  
4325 4330 4335

Pro Val Gly Phe Thr Leu Arg Asn Thr Val Cys Thr Val Cys Gly Met  
4340 4345 4350

Trp Lys Gly Tyr Gly Cys Ser Cys Asp Gln Leu Arg Glu Pro Leu Met  
4355 4360 4365

Gln Ser Ala Asp Ala Ser Thr Xaa Xaa Xaa Xaa Xaa Gly Val Ser Ala  
4370 4375 4380

Ala Arg Leu Thr Pro Cys Gly Thr Gly Thr Ser Thr Asp Val Val Tyr  
4385 4390 4395 4400

Arg Ala Phe Asp Ile Tyr Asn Glu Lys Val Ala Gly Phe Ala Lys Phe  
4405 4410 4415

Leu Lys Thr Asn Cys Cys Arg Phe Gln Glu Lys Asp Glu Glu Gly Asn  
4420 4425 4430

Leu Leu Asp Ser Tyr Phe Val Val Lys Arg His Thr Met Ser Asn Tyr  
4435 4440 4445

Gln His Glu Glu Thr Ile Tyr Asn Leu Val Lys Asp Cys Pro Ala Val  
4450 4455 4460

Ala Val His Asp Phe Phe Lys Phe Arg Val Asp Gly Asp Met Val Pro  
4465 4470 4475 4480

His Ile Ser Arg Gln Arg Leu Thr Lys Tyr Thr Met Ala Asp Leu Val  
4485 4490 4495

Tyr Ala Leu Arg His Phe Asp Glu Gly Asn Cys Asp Thr Leu Lys Glu  
4500 4505 4510

Ile Leu Val Thr Tyr Asn Cys Cys Asp Asp Asp Tyr Phe Asn Lys Lys  
4515 4520 4525

Asp Trp Tyr Asp Phe Val Glu Asn Pro Asp Ile Leu Arg Val Tyr Ala  
4530 4535 4540

Asn Leu Gly Glu Arg Val Arg Gln Ser Leu Leu Lys Thr Val Gln Phe  
4545 4550 4555 4560

Cys Asp Ala Met Arg Asp Ala Gly Ile Val Gly Val Leu Thr Leu Asp  
4565 4570 4575

SEQLIST-20480.TXT

Asn Gln Asp Leu Asn Gly Asn Trp Tyr Asp Phe Gly Asp Phe Val Gln  
                   4580                                  4585                                  4590  
 Val Ala Pro Gly Cys Gly Val Pro Ile Val Asp Ser Tyr Tyr Ser Leu  
                   4595                                  4600                                  4605  
 Leu Met Pro Ile Leu Thr Leu Thr Arg Ala Leu Ala Ala Glu Ser His  
                   4610                                  4615                                  4620  
 Met Asp Ala Asp Leu Ala Lys Pro Leu Ile Lys Trp Asp Leu Leu Lys  
                   4625                                  4630                                  4635                                  4640  
 Tyr Asp Phe Thr Glu Glu Arg Leu Cys Leu Phe Asp Arg Tyr Phe Lys  
                                   4645                                  4650                                  4655  
 Tyr Trp Asp Gln Thr Tyr His Pro Asn Cys Ile Asn Cys Leu Asp Asp  
                                   4660                                  4665                                  4670  
 Arg Cys Ile Leu His Cys Ala Asn Phe Asn Val Leu Phe Ser Thr Val  
                                   4675                                  4680                                  4685  
 Phe Pro Pro Thr Ser Phe Gly Pro Leu Val Arg Lys Ile Phe Val Asp  
                                   4690                                  4695                                  4700  
 Gly Val Pro Phe Val Val Ser Thr Gly Tyr His Phe Arg Glu Leu Gly  
                                   4705                                  4710                                  4715                                  4720  
 Val Val His Asn Gln Asp Val Asn Leu His Ser Ser Arg Leu Ser Phe  
                                   4725                                  4730                                  4735  
 Lys Glu Leu Leu Val Tyr Ala Ala Asp Pro Ala Met His Ala Ala Ser  
                                   4740                                  4745                                  4750  
 Gly Asn Leu Leu Leu Asp Lys Arg Thr Thr Cys Phe Ser Val Ala Ala  
                                   4755                                  4760                                  4765  
 Leu Thr Asn Asn Val Ala Phe Gln Thr Val Lys Pro Gly Asn Phe Asn  
                                   4770                                  4775                                  4780  
 Lys Asp Phe Tyr Asp Phe Ala Val Ser Lys Gly Phe Phe Lys Glu Gly  
                                   4785                                  4790                                  4795                                  4800  
 Ser Ser Val Glu Leu Lys His Phe Phe Phe Ala Gln Asp Gly Asn Ala  
                                   4805                                  4810                                  4815  
 Ala Ile Ser Asp Tyr Asp Tyr Tyr Arg Tyr Asn Leu Pro Thr Met Cys  
                                   4820                                  4825                                  4830  
 Asp Ile Arg Gln Leu Leu Phe Val Val Glu Val Val Asp Lys Tyr Phe  
                                   4835                                  4840                                  4845  
 Asp Cys Tyr Asp Gly Gly Cys Ile Asn Ala Asn Gln Val Ile Val Asn  
                                   4850                                  4855                                  4860  
 Asn Leu Asp Lys Ser Ala Gly Phe Pro Phe Asn Lys Trp Gly Lys Ala  
                                   4865                                  4870                                  4875                                  4880  
 Arg Leu Tyr Tyr Asp Ser Met Ser Tyr Glu Asp Gln Asp Ala Leu Phe  
                                   4885                                  4890                                  4895  
 Ala Tyr Thr Lys Arg Asn Val Ile Pro Thr Ile Thr Gln Met Asn Leu  
                                   4900                                  4905                                  4910

SEQLIST-20480.TXT

Lys Tyr Ala Ile Ser Ala Lys Asn Arg Ala Arg Thr Val Ala Gly Val  
 4915 4920 4925  
 Ser Ile Cys Ser Thr Met Thr Asn Arg Gln Phe His Gln Lys Leu Leu  
 4930 4935 4940  
 Lys Ser Ile Ala Ala Thr Arg Gly Ala Thr Val Val Ile Gly Thr Ser  
 4945 4950 4955 4960  
 Lys Phe Tyr Gly Gly Trp His Asn Met Leu Lys Thr Val Tyr Ser Asp  
 4965 4970 4975  
 Val Glu Thr Pro His Leu Met Gly Trp Asp Tyr Pro Lys Cys Asp Arg  
 4980 4985 4990  
 Ala Met Pro Asn Met Leu Arg Ile Met Ala Ser Leu Val Leu Ala Arg  
 4995 5000 5005  
 Lys His Asn Thr Cys Cys Asn Leu Ser His Arg Phe Tyr Arg Leu Ala  
 5010 5015 5020  
 Asn Glu Cys Ala Gln Val Leu Ser Glu Met Val Met Cys Gly Gly Ser  
 5025 5030 5035 5040  
 Leu Tyr Val Lys Pro Gly Gly Thr Ser Ser Gly Asp Ala Thr Thr Ala  
 5045 5050 5055  
 Tyr Ala Asn Ser Val Phe Asn Ile Cys Gln Ala Val Thr Ala Asn Val  
 5060 5065 5070  
 Asn Ala Leu Ser Thr Asp Gly Asn Lys Ile Ala Asp Lys Tyr Val  
 5075 5080 5085  
 Arg Asn Leu Gln His Arg Leu Tyr Glu Cys Leu Tyr Arg Asn Arg Asp  
 5090 5095 5100  
 Val Asp His Glu Phe Val Asp Glu Phe Tyr Ala Tyr Leu Arg Lys His  
 5105 5110 5115 5120  
 Phe Ser Met Met Ile Leu Ser Asp Asp Ala Val Val Cys Tyr Asn Ser  
 5125 5130 5135  
 Asn Tyr Ala Ala Gln Gly Leu Val Ala Ser Ile Lys Asn Phe Lys Ala  
 5140 5145 5150  
 Val Leu Tyr Tyr Gln Asn Asn Val Phe Met Ser Glu Ala Lys Cys Trp  
 5155 5160 5165  
 Thr Glu Thr Asp Leu Thr Lys Gly Pro His Glu Phe Cys Ser Gln His  
 5170 5175 5180  
 Thr Met Leu Val Lys Gln Gly Asp Asp Tyr Val Tyr Leu Pro Tyr Pro  
 5185 5190 5195 5200  
 Asp Pro Ser Arg Ile Leu Gly Ala Gly Cys Phe Val Asp Asp Ile Val  
 5205 5210 5215  
 Lys Thr Asp Gly Thr Leu Met Ile Glu Arg Phe Val Ser Leu Ala Ile  
 5220 5225 5230  
 Asp Ala Tyr Pro Leu Thr Lys His Pro Asn Gln Glu Tyr Ala Asp Val  
 5235 5240 5245



SEQLIST-20480.TXT

Phe His Leu Tyr Leu Gln Tyr Ile Arg Lys Leu His Asp Glu Leu Thr  
 5250 5255 5260  
 Gly His Met Leu Asp Met Tyr Ser Val Met Leu Thr Asn Asp Asn Thr  
 5265 5270 5275 5280  
 Ser Arg Tyr Trp Glu Pro Glu Phe Tyr Glu Ala Met Tyr Thr Pro His  
 5285 5290 5295  
 Thr Val Leu Gln Ala Val Gly Ala Cys Val Leu Cys Asn Ser Gln Thr  
 5300 5305 5310  
 Ser Leu Arg Cys Gly Ala Cys Ile Arg Arg Pro Phe Leu Cys Cys Lys  
 5315 5320 5325  
 Cys Cys Tyr Asp His Val Ile Ser Thr Ser His Lys Leu Val Leu Ser  
 5330 5335 5340  
 Val Asn Pro Tyr Val Cys Asn Ala Pro Gly Cys Asp Val Thr Asp Val  
 5345 5350 5355 5360  
 Thr Gln Leu Tyr Leu Gly Gly Met Ser Tyr Tyr Cys Lys Ser His Lys  
 5365 5370 5375  
 Pro Pro Ile Ser Phe Pro Leu Cys Ala Asn Gly Gln Val Phe Gly Leu  
 5380 5385 5390  
 Tyr Lys Asn Thr Cys Val Gly Ser Asp Asn Val Thr Asp Phe Asn Ala  
 5395 5400 5405  
 Ile Ala Thr Cys Asp Trp Thr Asn Ala Gly Asp Tyr Ile Leu Ala Asn  
 5410 5415 5420  
 Thr Cys Thr Glu Arg Leu Lys Leu Phe Ala Ala Glu Thr Leu Lys Ala  
 5425 5430 5435 5440  
 Thr Glu Glu Thr Phe Lys Leu Ser Tyr Gly Ile Ala Thr Val Arg Glu  
 5445 5450 5455  
 Val Leu Ser Asp Arg Glu Leu His Leu Ser Trp Glu Val Gly Lys Pro  
 5460 5465 5470  
 Arg Pro Pro Leu Asn Arg Asn Tyr Val Phe Thr Gly Tyr Arg Val Thr  
 5475 5480 5485  
 Lys Asn Ser Lys Val Gln Ile Gly Glu Tyr Thr Phe Glu Lys Gly Asp  
 5490 5495 5500  
 Tyr Gly Asp Ala Val Val Tyr Arg Gly Thr Thr Thr Tyr Lys Leu Asn  
 5505 5510 5515 5520  
 Val Gly Asp Tyr Phe Val Leu Thr Ser His Thr Val Met Pro Leu Ser  
 5525 5530 5535  
 Ala Pro Thr Leu Val Pro Gln Glu His Tyr Val Arg Ile Thr Gly Leu  
 5540 5545 5550  
 Tyr Pro Thr Leu Asn Ile Ser Asp Glu Phe Ser Ser Asn Val Ala Asn  
 5555 5560 5565  
 Tyr Gln Lys Val Gly Met Gln Lys Tyr Ser Thr Leu Gln Gly Pro Pro  
 5570 5575 5580

SEQLIST-20480.TXT

Gly Thr Gly Lys Ser His Phe Ala Ile Gly Leu Ala Leu Tyr Tyr Pro  
 5585 5590 5595 5600  
 Ser Ala Arg Ile Val Tyr Thr Ala Cys Ser His Ala Ala Val Asp Ala  
 5605 5610 5615  
 Leu Cys Glu Lys Ala Leu Lys Tyr Leu Pro Ile Asp Lys Cys Ser Arg  
 5620 5625 5630  
 Ile Ile Pro Ala Arg Ala Arg Val Glu Cys Phe Asp Lys Phe Lys Val  
 5635 5640 5645  
 Asn Ser Thr Leu Glu Gln Tyr Val Phe Cys Thr Val Asn Ala Leu Pro  
 5650 5655 5660  
 Glu Thr Thr Ala Asp Ile Val Val Phe Asp Glu Ile Ser Met Ala Thr  
 5665 5670 5675 5680  
 Asn Tyr Asp Leu Ser Val Val Asn Ala Arg Leu Arg Ala Lys His Tyr  
 5685 5690 5695  
 Val Tyr Ile Gly Asp Pro Ala Gln Leu Pro Ala Pro Arg Thr Leu Leu  
 5700 5705 5710  
 Thr Lys Gly Thr Leu Glu Pro Glu Tyr Phe Asn Ser Val Cys Arg Leu  
 5715 5720 5725  
 Met Lys Thr Ile Gly Pro Asp Met Phe Leu Gly Thr Cys Arg Arg Cys  
 5730 5735 5740  
 Pro Ala Glu Ile Val Asp Thr Val Ser Ala Leu Val Tyr Asp Asn Lys  
 5745 5750 5755 5760  
 Leu Lys Ala His Lys Asp Lys Ser Ala Gln Cys Phe Lys Met Phe Tyr  
 5765 5770 5775  
 Lys Gly Val Ile Thr His Asp Val Ser Ser Ala Ile Asn Arg Pro Gln  
 5780 5785 5790  
 Ile Gly Val Val Arg Glu Phe Leu Thr Arg Asn Pro Ala Trp Arg Lys  
 5795 5800 5805  
 Ala Val Phe Ile Ser Pro Tyr Asn Ser Gln Asn Ala Val Ala Ser Lys  
 5810 5815 5820  
 Ile Leu Gly Leu Pro Thr Gln Thr Val Asp Ser Ser Gln Gly Ser Glu  
 5825 5830 5835 5840  
 Tyr Asp Tyr Val Ile Phe Thr Gln Thr Thr Glu Thr Ala His Ser Cys  
 5845 5850 5855  
 Asn Val Asn Arg Phe Asn Val Ala Ile Thr Arg Ala Lys Ile Gly Ile  
 5860 5865 5870  
 Leu Cys Ile Met Ser Asp Arg Asp Leu Tyr Asp Lys Leu Gln Phe Thr  
 5875 5880 5885  
 Ser Leu Glu Ile Pro Arg Arg Asn Val Ala Thr Leu Gln Ala Glu Asn  
 5890 5895 5900  
 Val Thr Gly Leu Phe Lys Asp Cys Ser Lys Ile Ile Thr Gly Leu His  
 5905 5910 5915 5920

SEQLIST-20480.TXT

Pro Thr Gln Ala Pro Thr His Leu Ser Val Asp Ile Lys Phe Lys Thr  
5925 5930 5935

Glu Gly Leu Cys Val Asp Ile Pro Gly Ile Pro Lys Asp Met Thr Tyr  
5940 5945 5950

Arg Arg Leu Ile Ser Met Met Gly Phe Lys Met Asn Tyr Gln Val Asn  
5955 5960 5965

Gly Tyr Pro Asn Met Phe Ile Thr Arg Glu Glu Ala Ile Arg His Val  
5970 5975 5980

Arg Ala Trp Ile Gly Phe Asp Val Glu Gly Cys His Ala Thr Arg Asp  
5985 5990 5995 6000

Ala Val Gly Thr Asn Leu Pro Leu Gln Leu Gly Phe Ser Thr Gly Val  
6005 6010 6015

Asn Leu Val Ala Val Pro Thr Gly Tyr Val Asp Thr Glu Asn Asn Thr  
6020 6025 6030

Glu Phe Thr Arg Val Asn Ala Lys Pro Pro Pro Gly Asp Gln Phe Lys  
6035 6040 6045

His Leu Ile Pro Leu Met Tyr Lys Gly Leu Pro Trp Asn Val Val Arg  
6050 6055 6060

Ile Lys Ile Val Gln Met Leu Ser Asp Thr Leu Lys Gly Leu Ser Asp  
6065 6070 6075 6080

Arg Val Val Phe Val Leu Trp Ala His Gly Phe Glu Leu Thr Ser Met  
6085 6090 6095

Lys Tyr Phe Val Lys Ile Gly Pro Glu Arg Thr Cys Cys Leu Cys Asp  
6100 6105 6110

Lys Arg Ala Thr Cys Phe Ser Thr Ser Ser Asp Thr Tyr Ala Cys Trp  
6115 6120 6125

Asn His Ser Val Gly Phe Asp Tyr Val Tyr Asn Pro Phe Met Ile Asp  
6130 6135 6140

Val Gln Gln Trp Gly Phe Thr Gly Asn Leu Gln Ser Asn His Asp Gln  
6145 6150 6155 6160

His Cys Gln Val His Gly Asn Ala His Val Ala Ser Cys Asp Ala Ile  
6165 6170 6175

Met Thr Arg Cys Leu Ala Val His Glu Cys Phe Val Lys Arg Val Asp  
6180 6185 6190

Trp Ser Val Glu Tyr Pro Ile Ile Gly Asp Glu Leu Arg Val Asn Ser  
6195 6200 6205

Ala Cys Arg Lys Val Gln His Met Val Val Lys Ser Ala Leu Leu Ala  
6210 6215 6220

Asp Lys Phe Pro Val Leu His Asp Ile Gly Asn Pro Lys Ala Ile Lys  
6225 6230 6235 6240

Cys Val Pro Gln Ala Glu Val Glu Trp Lys Phe Tyr Asp Ala Gln Pro  
6245 6250 6255

SEQLIST-20480.TXT

Cys Ser Asp Lys Ala Tyr Lys Ile Glu Glu Leu Phe Tyr Ser Tyr Ala  
 6260 6265 6270  
 Thr His His Asp Lys Phe Thr Asp Gly Val Cys Leu Phe Trp Asn Cys  
 6275 6280 6285  
 Asn Val Asp Arg Tyr Pro Ala Asn Ala Ile Val Cys Arg Phe Asp Thr  
 6290 6295 6300  
 Arg Val Leu Ser Asn Leu Asn Leu Pro Gly Cys Asp Gly Gly Ser Leu  
 6305 6310 6315 6320  
 Tyr Val Asn Lys His Ala Phe His Thr Pro Ala Phe Asp Lys Ser Ala  
 6325 6330 6335  
 Phe Thr Asn Leu Lys Gln Leu Pro Phe Phe Tyr Tyr Ser Asp Ser Pro  
 6340 6345 6350  
 Cys Glu Ser His Gly Lys Gln Val Val Ser Asp Ile Asp Tyr Val Pro  
 6355 6360 6365  
 Leu Lys Ser Ala Thr Cys Ile Thr Arg Cys Asn Leu Gly Gly Ala Val  
 6370 6375 6380  
 Cys Arg His His Ala Asn Glu Tyr Arg Gln Tyr Leu Asp Ala Tyr Asn  
 6385 6390 6395 6400  
 Met Met Ile Ser Ala Gly Phe Ser Leu Trp Ile Tyr Lys Gln Phe Asp  
 6405 6410 6415  
 Thr Tyr Asn Leu Trp Asn Thr Phe Thr Arg Leu Gln Ser Leu Glu Asn  
 6420 6425 6430  
 Val Ala Tyr Asn Val Val Asn Lys Gly His Phe Asp Gly His Ala Gly  
 6435 6440 6445  
 Glu Ala Pro Val Ser Ile Ile Asn Asn Ala Val Tyr Thr Lys Val Asp  
 6450 6455 6460  
 Gly Ile Asp Val Glu Ile Phe Glu Asn Lys Thr Thr Leu Pro Val Asn  
 6465 6470 6475 6480  
 Val Ala Phe Glu Leu Trp Ala Lys Arg Asn Ile Lys Pro Val Pro Glu  
 6485 6490 6495  
 Ile Lys Ile Leu Asn Asn Leu Gly Val Asp Ile Ala Ala Asn Thr Val  
 6500 6505 6510  
 Ile Trp Asp Tyr Lys Arg Glu Ala Pro Ala His Val Ser Thr Ile Gly  
 6515 6520 6525  
 Val Cys Thr Met Thr Asp Ile Ala Lys Lys Pro Thr Glu Ser Ala Cys  
 6530 6535 6540  
 Ser Ser Leu Thr Val Leu Phe Asp Gly Arg Val Glu Gly Gln Val Asp  
 6545 6550 6555 6560  
 Leu Phe Arg Asn Ala Arg Asn Gly Val Leu Ile Thr Glu Gly Ser Val  
 6565 6570 6575  
 Lys Gly Leu Thr Pro Ser Lys Gly Pro Ala Gln Ala Ser Val Asn Gly  
 6580 6585 6590

SEQLIST-20480.TXT

Val Thr Leu Ile Gly Glu Ser Val Lys Thr Gln Phe Asn Tyr Phe Lys  
6595 6600 6605

Lys Val Asp Gly Ile Ile Gln Gln Leu Pro Glu Thr Tyr Phe Thr Gln  
6610 6615 6620

Ser Arg Asp Leu Glu Asp Phe Lys Pro Arg Ser Gln Met Glu Thr Asp  
6625 6630 6635 6640

Phe Leu Glu Leu Ala Met Asp Glu Phe Ile Gln Arg Tyr Lys Leu Glu  
6645 6650 6655

Gly Tyr Ala Phe Glu His Ile Val Tyr Gly Asp Phe Ser His Gly Gln  
6660 6665 6670

Leu Gly Gly Leu His Leu Met Ile Gly Leu Ala Lys Arg Ser Gln Asp  
6675 6680 6685

Ser Pro Leu Lys Leu Glu Asp Phe Ile Pro Met Asp Ser Thr Val Lys  
6690 6695 6700

Asn Tyr Phe Ile Thr Asp Ala Gln Thr Gly Ser Ser Lys Cys Val Cys  
6705 6710 6715 6720

Ser Val Ile Asp Leu Leu Leu Asp Asp Phe Val Glu Ile Ile Lys Ser  
6725 6730 6735

Gln Asp Leu Ser Val Ile Ser Lys Val Val Lys Val Thr Ile Asp Tyr  
6740 6745 6750

Ala Glu Ile Ser Phe Met Leu Trp Cys Lys Asp Gly His Val Glu Thr  
6755 6760 6765

Phe Tyr Pro Lys Leu Gln Ala Ser Arg Ala Trp Gln Pro Gly Val Ala  
6770 6775 6780

Met Pro Asn Leu Tyr Lys Met Gln Arg Met Leu Leu Glu Lys Cys Asp  
6785 6790 6795 6800

Leu Gln Asn Tyr Gly Glu Asn Ala Val Ile Pro Lys Gly Ile Met Met  
6805 6810 6815

Asn Val Ala Lys Tyr Thr Gln Leu Cys Gln Tyr Leu Asn Thr Leu Thr  
6820 6825 6830

Leu Ala Val Pro Tyr Asn Met Arg Val Ile His Phe Gly Ala Gly Ser  
6835 6840 6845

Asp Lys Gly Val Ala Pro Gly Thr Ala Val Leu Arg Gln Trp Leu Pro  
6850 6855 6860

Thr Gly Thr Leu Leu Val Asp Ser Asp Leu Asn Asp Phe Val Ser Asp  
6865 6870 6875 6880

Ala Tyr Ser Thr Leu Ile Gly Asp Cys Ala Thr Val His Thr Ala Asn  
6885 6890 6895

Lys Trp Asp Leu Ile Ile Ser Asp Met Tyr Asp Pro Arg Thr Lys His  
6900 6905 6910

Val Thr Lys Glu Asn Asp Ser Lys Glu Gly Phe Phe Thr Tyr Leu Cys  
6915 6920 6925

SEQLIST-20480.TXT

Gly Phe Ile Lys Gln Lys Leu Ala Leu Gly Gly Ser Ile Ala Val Lys  
6930 6935 6940  
Ile Thr Glu His Ser Trp Asn Ala Asp Leu Tyr Lys Leu Met Gly His  
6945 6950 6955 6960  
Phe Ser Trp Trp Thr Ala Phe Val Thr Asn Val Asn Ala Ser Ser Ser  
6965 6970 6975  
Glu Ala Phe Leu Ile Gly Ala Asn Tyr Leu Gly Lys Pro Lys Glu Gln  
6980 6985 6990  
Ile Asp Gly Tyr Thr Met His Ala Asn Tyr Ile Phe Trp Arg Asn Thr  
6995 7000 7005  
Asn Pro Ile Gln Leu Ser Ser Tyr Ser Leu Phe Asp Met Ser Lys Phe  
7010 7015 7020  
Pro Leu Lys Leu Arg Gly Thr Ala Val Met Ser Leu Lys Glu Asn Gln  
7025 7030 7035 7040  
Ile Asn Asp Met Ile Tyr Ser Leu Leu Glu Lys Gly Arg Leu Ile Ile  
7045 7050 7055  
Arg Glu Asn Asn Arg Val Val Val Ser Ser Asp Ile Leu Val Asn Asn  
7060 7065 7070

<210> 7240  
<211> 7073  
<212> PRT  
<213> SARS coronavirus

<220>  
<221> misc\_feature  
<222> 4376...4381  
<223> xaa is any amino acid

<400> 7240  
Met Glu Ser Leu Val Leu Gly Val Asn Glu Lys Thr His Val Gln Leu  
1 5 10 15  
Ser Leu Pro Val Leu Gln Val Arg Asp Val Leu Val Arg Gly Phe Gly  
20 25 30  
Asp Ser Val Glu Glu Ala Leu Ser Glu Ala Arg Glu His Leu Lys Asn  
35 40 45  
Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val Leu Pro Gln Leu  
50 55 60  
Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala Leu Ser Thr Asn  
65 70 75 80  
His Gly His Lys Val Val Glu Leu Val Ala Glu Met Asp Gly Ile Gln  
85 90 95  
Tyr Gly Arg Ser Gly Ile Thr Leu Gly Val Leu Val Pro His Val Gly  
100 105 110  
Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg Lys Asn Gly Asn  
115 120 125

SEQLIST-20480.TXT

Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu Lys Ser Tyr Asp  
 130 135 140  
 Leu Gly Asp Glu Leu Gly Thr Asp Pro Ile Glu Asp Tyr Glu Gln Asn  
 145 150 155 160  
 Trp Asn Thr Lys His Gly Ser Gly Ala Leu Arg Glu Leu Thr Arg Glu  
 165 170 175  
 Leu Asn Gly Gly Ala Val Thr Arg Tyr Val Asp Asn Asn Phe Cys Gly  
 180 185 190  
 Pro Asp Gly Tyr Pro Leu Asp Cys Ile Lys Asp Phe Leu Ala Arg Ala  
 195 200 205  
 Gly Lys Ser Met Cys Thr Leu Ser Glu Gln Leu Asp Tyr Ile Glu Ser  
 210 215 220  
 Lys Arg Gly Val Tyr Cys Cys Arg Asp His Glu His Glu Ile Ala Trp  
 225 230 235 240  
 Phe Thr Glu Arg Ser Asp Lys Ser Tyr Glu His Gln Thr Pro Phe Glu  
 245 250 255  
 Ile Lys Ser Ala Lys Lys Phe Asp Thr Phe Lys Gly Glu Cys Pro Lys  
 260 265 270  
 Phe Val Phe Pro Leu Asn Ser Lys Val Lys Val Ile Gln Pro Arg Val  
 275 280 285  
 Glu Lys Lys Lys Thr Glu Gly Phe Met Gly Arg Ile Arg Ser Val Tyr  
 290 295 300  
 Pro Val Ala Ser Pro Gln Glu Cys Asn Asn Met His Leu Ser Thr Leu  
 305 310 315 320  
 Met Lys Cys Asn His Cys Asp Glu Val Ser Trp Gln Thr Cys Asp Phe  
 325 330 335  
 Leu Lys Ala Thr Cys Glu His Cys Gly Thr Glu Asn Leu Val Ile Glu  
 340 345 350  
 Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met  
 355 360 365  
 Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val  
 370 375 380  
 Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly  
 385 390 395 400  
 Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys  
 405 410 415  
 Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly  
 420 425 430  
 Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu  
 435 440 445  
 Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val  
 450 455 460

SEQLIST-20480.TXT

Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe  
 465 470 475 480  
 Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr  
 485 490 495  
 Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr  
 500 505 510  
 Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser  
 515 520 525  
 Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala Ala Gly Val Ile  
 530 535 540  
 Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pro  
 545 550 555 560  
 Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln  
 565 570 575  
 Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser Asp Leu Leu Thr  
 580 585 590  
 Asn Ser Val Ile Ile Met Ala Tyr Val Thr Gly Gly Leu Val Gln Gln  
 595 600 605  
 Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr Val Glu Lys Leu  
 610 615 620  
 Arg Pro Ile Phe Glu Trp Ile Glu Ala Lys Leu Ser Ala Gly Val Glu  
 625 630 635 640  
 Phe Leu Lys Asp Ala Trp Glu Ile Leu Lys Phe Leu Ile Thr Gly Val  
 645 650 655  
 Phe Asp Ile Val Lys Gly Gln Ile Gln Val Ala Ser Asp Asn Ile Lys  
 660 665 670  
 Asp Cys Val Lys Cys Phe Ile Asp Val Val Asn Lys Ala Leu Glu Met  
 675 680 685  
 Cys Ile Asp Gln Val Thr Ile Ala Gly Ala Lys Leu Arg Ser Leu Asn  
 690 695 700  
 Leu Gly Glu Val Phe Ile Ala Gln Ser Lys Gly Leu Tyr Arg Gln Cys  
 705 710 715 720  
 Ile Arg Gly Lys Glu Gln Leu Gln Leu Leu Met Pro Leu Lys Ala Pro  
 725 730 735  
 Lys Glu Val Thr Phe Leu Glu Gly Asp Ser His Asp Thr Val Leu Thr  
 740 745 750  
 Ser Glu Glu Val Val Leu Lys Asn Gly Glu Leu Glu Ala Leu Glu Thr  
 755 760 765  
 Pro Val Asp Ser Phe Thr Asn Gly Ala Ile Val Gly Thr Pro Val Cys  
 770 775 780  
 Val Asn Gly Leu Met Leu Leu Glu Ile Lys Asp Lys Glu Gln Tyr Cys  
 785 790 795 800



SEQLIST-20480.TXT

Ala Leu Ser Pro Gly Leu Leu Ala Thr Asn Asn Val Phe Arg Leu Lys  
805 810 815

Gly Gly Ala Pro Ile Lys Gly Val Thr Phe Gly Glu Asp Thr Val Trp  
820 825 830

Glu Val Gln Gly Tyr Lys Asn Val Arg Ile Thr Phe Glu Leu Asp Glu  
835 840 845

Arg Val Asp Lys Val Leu Asn Glu Lys Cys Ser Val Tyr Thr Val Glu  
850 855 860

Ser Gly Thr Glu Val Thr Glu Phe Ala Cys Val Val Ala Glu Ala Val  
865 870 875 880

Val Lys Thr Leu Gln Pro Val Ser Asp Leu Leu Thr Asn Met Gly Ile  
885 890 895

Asp Leu Asp Glu Trp Ser Val Ala Thr Phe Tyr Leu Phe Asp Asp Ala  
900 905 910

Gly Glu Glu Asn Phe Ser Ser Arg Met Tyr Cys Ser Phe Tyr Pro Pro  
915 920 925

Asp Glu Glu Glu Glu Asp Asp Ala Glu Cys Glu Glu Glu Glu Ile Asp  
930 935 940

Glu Thr Cys Glu His Glu Tyr Gly Thr Glu Asp Asp Tyr Gln Gly Leu  
945 950 955 960

Pro Leu Glu Phe Gly Ala Ser Ala Glu Thr Val Arg Val Glu Glu Glu  
965 970 975

Glu Glu Glu Asp Trp Leu Asp Asp Thr Thr Glu Gln Ser Glu Ile Glu  
980 985 990

Pro Glu Pro Glu Pro Thr Pro Glu Glu Pro Val Asn Gln Phe Thr Gly  
995 1000 1005

Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Ile Val  
1010 1015 1020

Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala Ala Asn  
1025 1030 1035 1040

Ile His Leu Lys His Gly Gly Gly Val Ala Gly Ala Leu Asn Lys Ala  
1045 1050 1055

Thr Asn Gly Ala Met Gln Lys Glu Ser Asp Asp Tyr Ile Lys Leu Asn  
1060 1065 1070

Gly Pro Leu Thr Val Gly Gly Ser Cys Leu Leu Ser Gly His Asn Leu  
1075 1080 1085

Ala Lys Lys Cys Leu His Val Val Gly Pro Asn Leu Asn Ala Gly Glu  
1090 1095 1100

Asp Ile Gln Leu Leu Lys Ala Ala Tyr Glu Asn Phe Asn Ser Gln Asp  
1105 1110 1115 1120

Ile Leu Leu Ala Pro Leu Leu Ser Ala Gly Ile Phe Gly Ala Lys Pro  
1125 1130 1135

SEQLIST-20480.TXT

Leu Gln Ser Leu Gln Val Cys Val Gln Thr Val Arg Thr Gln Val Tyr  
 1140 1145 1150  
 Ile Ala Val Asn Asp Lys Ala Leu Tyr Glu Gln Val Val Met Asp Tyr  
 1155 1160 1165  
 Leu Asp Asn Leu Lys Pro Arg Val Glu Ala Pro Lys Gln Glu Glu Pro  
 1170 1175 1180  
 Pro Asn Thr Glu Asp Ser Lys Thr Glu Glu Lys Ser Val Val Gln Lys  
 1185 1190 1195 1200  
 Pro Val Asp Val Lys Pro Lys Ile Lys Ala Cys Ile Asp Glu Val Thr  
 1205 1210 1215  
 Thr Thr Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys Leu Leu Leu Phe  
 1220 1225 1230  
 Ala Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln Asn Met Leu Arg  
 1235 1240 1245  
 Gly Glu Asp Met Ser Phe Leu Glu Lys Asp Ala Pro Tyr Met Val Gly  
 1250 1255 1260  
 Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val Ile Pro Ser Lys  
 1265 1270 1275 1280  
 Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala Leu Lys Lys Val  
 1285 1290 1295  
 Pro Val Asp Glu Tyr Ile Thr Thr Tyr Pro Gly Gln Gly Cys Ala Gly  
 1300 1305 1310  
 Tyr Thr Leu Glu Glu Ala Lys Thr Ala Leu Lys Lys Cys Lys Ser Ala  
 1315 1320 1325  
 Phe Tyr Val Leu Pro Ser Glu Ala Pro Asn Ala Lys Glu Glu Ile Leu  
 1330 1335 1340  
 Gly Thr Val Ser Trp Asn Leu Arg Glu Met Leu Ala His Ala Glu Glu  
 1345 1350 1355 1360  
 Thr Arg Lys Leu Met Pro Ile Cys Met Asp Val Arg Ala Ile Met Ala  
 1365 1370 1375  
 Thr Ile Gln Arg Lys Tyr Lys Gly Ile Lys Ile Gln Glu Gly Ile Val  
 1380 1385 1390  
 Asp Tyr Gly Val Arg Phe Phe Phe Tyr Thr Ser Lys Glu Pro Val Ala  
 1395 1400 1405  
 Ser Ile Ile Thr Lys Leu Asn Ser Leu Asn Glu Pro Leu Val Thr Met  
 1410 1415 1420  
 Pro Ile Gly Tyr Val Thr His Gly Phe Asn Leu Glu Glu Ala Ala Arg  
 1425 1430 1435 1440  
 Cys Met Arg Ser Leu Lys Ala Pro Ala Val Val Ser Val Ser Ser Pro  
 1445 1450 1455  
 Asp Ala Val Thr Thr Tyr Asn Gly Tyr Leu Thr Ser Ser Ser Lys Thr  
 1460 1465 1470

SEQLIST-20480.TXT

Ser Glu Glu His Phe Val Glu Thr Val Ser Leu Ala Gly Ser Tyr Arg  
1475 1480 1485

Asp Trp Ser Tyr Ser Gly Gln Arg Thr Glu Leu Gly Val Glu Phe Leu  
1490 1495 1500

Lys Arg Gly Asp Lys Ile Val Tyr His Thr Leu Glu Ser Pro Val Glu  
1505 1510 1515 1520

Phe His Leu Asp Gly Glu Val Leu Ser Leu Asp Lys Leu Lys Ser Leu  
1525 1530 1535

Leu Ser Leu Arg Glu Val Lys Thr Ile Lys Val Phe Thr Thr Val Asp  
1540 1545 1550

Asn Thr Asn Leu His Thr Gln Leu Val Asp Met Ser Met Thr Tyr Gly  
1555 1560 1565

Gln Gln Phe Gly Pro Thr Tyr Leu Asp Gly Ala Asp Val Thr Lys Ile  
1570 1575 1580

Lys Pro His Val Asn His Glu Gly Lys Thr Phe Phe Val Leu Pro Ser  
1585 1590 1595 1600

Asp Asp Thr Leu Arg Ser Glu Ala Phe Glu Tyr Tyr His Thr Leu Asp  
1605 1610 1615

Glu Ser Phe Leu Gly Arg Tyr Met Ser Ala Leu Asn His Thr Lys Lys  
1620 1625 1630

Trp Lys Phe Pro Gln Val Gly Gly Leu Thr Ser Ile Lys Trp Ala Asp  
1635 1640 1645

Asn Asn Cys Tyr Leu Ser Ser Val Leu Leu Ala Leu Gln Gln Leu Glu  
1650 1655 1660

Val Lys Phe Asn Ala Pro Ala Leu Gln Glu Ala Tyr Tyr Arg Ala Arg  
1665 1670 1675 1680

Ala Gly Asp Ala Ala Asn Phe Cys Ala Leu Ile Leu Ala Tyr Ser Asn  
1685 1690 1695

Lys Thr Val Gly Glu Leu Gly Asp Val Arg Glu Thr Met Thr His Leu  
1700 1705 1710

Leu Gln His Ala Asn Leu Glu Ser Ala Lys Arg Val Leu Asn Val Val  
1715 1720 1725

Cys Lys His Cys Gly Gln Lys Thr Thr Thr Leu Thr Gly Val Glu Ala  
1730 1735 1740

Val Met Tyr Met Gly Thr Leu Ser Tyr Asp Asn Leu Lys Thr Gly Val  
1745 1750 1755 1760

Ser Ile Pro Cys Val Cys Gly Arg Asp Ala Thr Gln Tyr Leu Val Gln  
1765 1770 1775

Gln Glu Ser Ser Phe Val Met Met Ser Ala Pro Pro Ala Glu Tyr Lys  
1780 1785 1790

Leu Gln Gln Gly Thr Phe Leu Cys Ala Asn Glu Tyr Thr Gly Asn Tyr  
1795 1800 1805

SEQLIST-20480.TXT

Gln Cys Gly His Tyr Thr His Ile Thr Ala Lys Glu Thr Leu Tyr Arg  
1810 1815 1820

Ile Asp Gly Ala His Leu Thr Lys Met Ser Glu Tyr Lys Gly Pro Val  
1825 1830 1835 1840

Thr Asp Val Phe Tyr Lys Glu Thr Ser Tyr Thr Thr Thr Ile Lys Pro  
1845 1850 1855

Val Ser Tyr Lys Leu Asp Gly Val Thr Tyr Thr Glu Ile Glu Pro Lys  
1860 1865 1870

Leu Asp Gly Tyr Tyr Lys Lys Asp Asn Ala Tyr Tyr Thr Glu Gln Pro  
1875 1880 1885

Ile Asp Leu Val Pro Thr Gln Pro Leu Pro Asn Ala Ser Phe Asp Asn  
1890 1895 1900

Phe Lys Leu Thr Cys Ser Asn Thr Lys Phe Ala Asp Asp Leu Asn Gln  
1905 1910 1915 1920

Met Thr Gly Phe Thr Lys Pro Ala Ser Arg Glu Leu Ser Val Thr Phe  
1925 1930 1935

Phe Pro Asp Leu Asn Gly Asp Val Val Ala Ile Asp Tyr Arg His Tyr  
1940 1945 1950

Ser Ala Ser Phe Lys Lys Gly Ala Lys Leu Leu His Lys Pro Ile Val  
1955 1960 1965

Trp His Ile Asn Gln Ala Thr Thr Lys Thr Thr Phe Lys Pro Asn Thr  
1970 1975 1980

Trp Cys Leu Arg Cys Leu Trp Ser Thr Lys Pro Val Asp Thr Ser Asn  
1985 1990 1995 2000

Ser Phe Glu Val Leu Ala Val Glu Asp Thr Gln Gly Met Asp Asn Leu  
2005 2010 2015

Ala Cys Glu Ser Gln Gln Pro Thr Ser Glu Glu Val Val Glu Asn Pro  
2020 2025 2030

Thr Ile Gln Lys Glu Val Ile Glu Cys Asp Val Lys Thr Thr Glu Val  
2035 2040 2045

Val Gly Asn Val Ile Leu Lys Pro Ser Asp Glu Gly Val Lys Val Thr  
2050 2055 2060

Gln Glu Leu Gly His Glu Asp Leu Met Ala Ala Tyr Val Glu Asn Thr  
2065 2070 2075 2080

Ser Ile Thr Ile Lys Lys Pro Asn Glu Leu Ser Leu Ala Leu Gly Leu  
2085 2090 2095

Lys Thr Ile Ala Thr His Gly Ile Ala Ala Ile Asn Ser Val Pro Trp  
2100 2105 2110

Ser Lys Ile Leu Ala Tyr Val Lys Pro Phe Leu Gly Gln Ala Ala Ile  
2115 2120 2125

Thr Thr Ser Asn Cys Ala Lys Arg Leu Ala Gln Arg Val Phe Asn Asn  
2130 2135 2140

SEQLIST-20480.TXT

Tyr Met Pro Tyr Val Phe Thr Leu Leu Phe Gln Leu Cys Thr Phe Thr  
 2145 2150 2155 2160  
 Lys Ser Thr Asn Ser Arg Ile Arg Ala Ser Leu Pro Thr Thr Ile Ala  
 2165 2170 2175  
 Lys Asn Ser Val Lys Ser Val Ala Lys Leu Cys Leu Asp Ala Gly Ile  
 2180 2185 2190  
 Asn Tyr Val Lys Ser Pro Lys Phe Ser Lys Leu Phe Thr Ile Ala Met  
 2195 2200 2205  
 Trp Leu Leu Leu Leu Ser Ile Cys Leu Gly Ser Leu Ile Cys Val Thr  
 2210 2215 2220  
 Ala Ala Phe Gly Val Leu Leu Ser Asn Phe Gly Ala Pro Ser Tyr Cys  
 2225 2230 2235 2240  
 Asn Gly Val Arg Glu Leu Tyr Leu Asn Ser Ser Asn Val Thr Thr Met  
 2245 2250 2255  
 Asp Phe Cys Glu Gly Ser Phe Pro Cys Ser Ile Cys Leu Ser Gly Leu  
 2260 2265 2270  
 Asp Ser Leu Asp Ser Tyr Pro Ala Leu Glu Thr Ile Gln Val Thr Ile  
 2275 2280 2285  
 Ser Ser Tyr Lys Leu Asp Leu Thr Ile Leu Gly Leu Ala Ala Glu Trp  
 2290 2295 2300  
 Val Leu Ala Tyr Met Leu Phe Thr Lys Phe Phe Tyr Leu Leu Gly Leu  
 2305 2310 2315 2320  
 Ser Ala Ile Met Gln Val Phe Phe Gly Tyr Phe Ala Ser His Phe Ile  
 2325 2330 2335  
 Ser Asn Ser Trp Leu Met Trp Phe Ile Ile Ser Ile Val Gln Met Ala  
 2340 2345 2350  
 Pro Val Ser Ala Met Val Arg Met Tyr Ile Phe Phe Ala Ser Phe Tyr  
 2355 2360 2365  
 Tyr Ile Trp Lys Ser Tyr Val His Ile Met Asp Gly Cys Thr Ser Ser  
 2370 2375 2380  
 Thr Cys Met Met Cys Tyr Lys Arg Asn Arg Ala Thr Arg Val Glu Cys  
 2385 2390 2395 2400  
 Thr Thr Ile Val Asn Gly Met Lys Arg Ser Phe Tyr Val Tyr Ala Asn  
 2405 2410 2415  
 Gly Gly Arg Gly Phe Cys Lys Thr His Asn Trp Asn Cys Leu Asn Cys  
 2420 2425 2430  
 Asp Thr Phe Cys Thr Gly Ser Thr Phe Ile Ser Asp Glu Val Ala Arg  
 2435 2440 2445  
 Asp Leu Ser Leu Gln Phe Lys Arg Pro Ile Asn Pro Thr Asp Gln Ser  
 2450 2455 2460  
 Ser Tyr Ile Val Asp Ser Val Ala Val Lys Asn Gly Ala Leu His Leu  
 2465 2470 2475 2480

SEQLIST-20480.TXT

Tyr Phe Asp Lys Ala Gly Gln Lys Thr Tyr Glu Arg His Pro Leu Ser  
 2485 2490 2495  
 His Phe Val Asn Leu Asp Asn Leu Arg Ala Asn Asn Thr Lys Gly Ser  
 2500 2505 2510  
 Leu Pro Ile Asn Val Ile Val Phe Asp Gly Lys Ser Lys Cys Asp Glu  
 2515 2520 2525  
 Ser Ala Ser Lys Ser Ala Ser Val Tyr Tyr Ser Gln Leu Met Cys Gln  
 2530 2535 2540  
 Pro Ile Leu Leu Leu Asp Gln Ala Leu Val Ser Asp Val Gly Asp Ser  
 2545 2550 2555 2560  
 Thr Glu Val Ser Val Lys Met Phe Asp Ala Tyr Val Asp Thr Phe Ser  
 2565 2570 2575  
 Ala Thr Phe Ser Val Pro Met Glu Lys Leu Lys Ala Leu Val Ala Thr  
 2580 2585 2590  
 Ala His Ser Glu Leu Ala Lys Gly Val Ala Leu Asp Gly Val Leu Ser  
 2595 2600 2605  
 Thr Phe Val Ser Ala Ala Arg Gln Gly Val Val Asp Thr Asp Val Asp  
 2610 2615 2620  
 Thr Lys Asp Val Ile Glu Cys Leu Lys Leu Ser His His Ser Asp Leu  
 2625 2630 2635 2640  
 Glu Val Thr Gly Asp Ser Cys Asn Asn Phe Met Leu Thr Tyr Asn Lys  
 2645 2650 2655  
 Val Glu Asn Met Thr Pro Arg Asp Leu Gly Ala Cys Ile Asp Cys Asn  
 2660 2665 2670  
 Ala Arg His Ile Asn Ala Gln Val Ala Lys Ser His Asn Val Ser Leu  
 2675 2680 2685  
 Ile Trp Asn Val Lys Asp Tyr Met Ser Leu Ser Glu Gln Leu Arg Lys  
 2690 2695 2700  
 Gln Ile Arg Ser Ala Ala Lys Lys Asn Asn Ile Pro Phe Arg Leu Thr  
 2705 2710 2715 2720  
 Cys Ala Thr Thr Arg Gln Val Val Asn Val Ile Thr Thr Lys Ile Ser  
 2725 2730 2735  
 Leu Lys Gly Gly Lys Ile Val Ser Thr Cys Phe Lys Leu Met Leu Lys  
 2740 2745 2750  
 Ala Thr Leu Leu Cys Val Leu Ala Ala Leu Val Cys Tyr Ile Val Met  
 2755 2760 2765  
 Pro Val His Thr Leu Ser Ile His Asp Gly Tyr Thr Asn Glu Ile Ile  
 2770 2775 2780  
 Gly Tyr Lys Ala Ile Gln Asp Gly Val Thr Arg Asp Ile Ile Ser Thr  
 2785 2790 2795 2800  
 Asp Asp Cys Phe Ala Asn Lys His Ala Gly Phe Asp Ala Trp Phe Ser  
 2805 2810 2815

SEQLIST-20480.TXT

Gln Arg Gly Gly Ser Tyr Lys Asn Asp Lys Ser Cys Pro Val Val Ala  
2820 2825 2830

Ala Ile Ile Thr Arg Glu Ile Gly Phe Ile Val Pro Gly Leu Pro Gly  
2835 2840 2845

Thr Val Leu Arg Ala Ile Asn Gly Asp Phe Leu His Phe Leu Pro Arg  
2850 2855 2860

Val Phe Ser Ala Val Gly Asn Ile Cys Tyr Thr Pro Ser Lys Leu Ile  
2865 2870 2875 2880

Glu Tyr Ser Asp Phe Ala Thr Ser Ala Cys Val Leu Ala Ala Glu Cys  
2885 2890 2895

Thr Ile Phe Lys Asp Ala Met Gly Lys Pro Val Pro Tyr Cys Tyr Asp  
2900 2905 2910

Thr Asn Leu Leu Glu Gly Ser Ile Ser Tyr Ser Glu Leu Arg Pro Asp  
2915 2920 2925

Thr Arg Tyr Val Leu Met Asp Gly Ser Ile Ile Gln Phe Pro Asn Thr  
2930 2935 2940

Tyr Leu Glu Gly Ser Val Arg Val Val Thr Thr Phe Asp Ala Glu Tyr  
2945 2950 2955 2960

Cys Arg His Gly Thr Cys Glu Arg Ser Glu Val Gly Ile Cys Leu Ser  
2965 2970 2975

Thr Ser Gly Arg Trp Val Leu Asn Asn Glu His Tyr Arg Ala Leu Ser  
2980 2985 2990

Gly Val Phe Cys Gly Val Asp Ala Met Asn Leu Ile Ala Asn Ile Phe  
2995 3000 3005

Thr Pro Leu Val Gln Pro Val Gly Ala Leu Asp Val Ser Ala Ser Val  
3010 3015 3020

Val Ala Gly Gly Ile Ile Ala Ile Leu Val Thr Cys Ala Ala Tyr Tyr  
3025 3030 3035 3040

Phe Met Lys Phe Arg Arg Val Phe Gly Glu Tyr Asn His Val Val Ala  
3045 3050 3055

Ala Asn Ala Leu Leu Phe Leu Met Ser Phe Thr Ile Leu Cys Leu Val  
3060 3065 3070

Pro Ala Tyr Ser Phe Leu Pro Gly Val Tyr Ser Val Phe Tyr Leu Tyr  
3075 3080 3085

Leu Thr Phe Tyr Phe Thr Asn Asp Val Ser Phe Leu Ala His Leu Gln  
3090 3095 3100

Trp Phe Ala Met Phe Ser Pro Ile Val Pro Phe Trp Ile Thr Ala Ile  
3105 3110 3115 3120

Tyr Val Phe Cys Ile Ser Leu Lys His Cys His Trp Phe Phe Asn Asn  
3125 3130 3135

Tyr Leu Arg Lys Arg Val Met Phe Asn Gly Val Thr Phe Ser Thr Phe  
3140 3145 3150

SEQLIST-20480.TXT

Glu Glu Ala Ala Leu Cys Thr Phe Leu Leu Asn Lys Glu Met Tyr Leu  
 3155 3160 3165  
 Lys Leu Arg Ser Glu Thr Leu Leu Pro Leu Thr Gln Tyr Asn Arg Tyr  
 3170 3175 3180  
 Leu Ala Leu Tyr Asn Lys Tyr Lys Tyr Phe Ser Gly Ala Leu Asp Thr  
 3185 3190 3195 3200  
 Thr Ser Tyr Arg Glu Ala Ala Cys Cys His Leu Ala Lys Ala Leu Asn  
 3205 3210 3215  
 Asp Phe Ser Asn Ser Gly Ala Asp Val Leu Tyr Gln Pro Pro Gln Thr  
 3220 3225 3230  
 Ser Ile Thr Ser Ala Val Leu Gln Ser Gly Phe Arg Lys Met Ala Phe  
 3235 3240 3245  
 Pro Ser Gly Lys Val Glu Gly Cys Met Val Gln Val Thr Cys Gly Thr  
 3250 3255 3260  
 Thr Thr Leu Asn Gly Leu Trp Leu Asp Asp Thr Val Tyr Cys Pro Arg  
 3265 3270 3275 3280  
 His Val Ile Cys Thr Ala Glu Asp Met Leu Asn Pro Asn Tyr Glu Asp  
 3285 3290 3295  
 Leu Leu Ile Arg Lys Ser Asn His Ser Phe Leu Val Gln Ala Gly Asn  
 3300 3305 3310  
 Val Gln Leu Arg Val Ile Gly His Ser Met Gln Asn Cys Leu Leu Arg  
 3315 3320 3325  
 Leu Lys Val Asp Thr Ser Asn Pro Lys Thr Pro Lys Tyr Lys Phe Val  
 3330 3335 3340  
 Arg Ile Gln Pro Gly Gln Thr Phe Ser Val Leu Ala Cys Tyr Asn Gly  
 3345 3350 3355 3360  
 Ser Pro Ser Gly Val Tyr Gln Cys Ala Met Arg Pro Asn His Thr Ile  
 3365 3370 3375  
 Lys Gly Ser Phe Leu Asn Gly Ser Cys Gly Ser Val Gly Phe Asn Ile  
 3380 3385 3390  
 Asp Tyr Asp Cys Val Ser Phe Cys Tyr Met His His Met Glu Leu Pro  
 3395 3400 3405  
 Thr Gly Val His Ala Gly Thr Asp Leu Glu Gly Lys Phe Tyr Gly Pro  
 3410 3415 3420  
 Phe Val Asp Arg Gln Thr Ala Gln Ala Ala Gly Thr Asp Thr Thr Ile  
 3425 3430 3435 3440  
 Thr Leu Asn Val Leu Ala Trp Leu Tyr Ala Ala Val Ile Asn Gly Asp  
 3445 3450 3455  
 Arg Trp Phe Leu Asn Arg Phe Thr Thr Thr Leu Asn Asp Phe Asn Leu  
 3460 3465 3470  
 Val Ala Met Lys Tyr Asn Tyr Glu Pro Leu Thr Gln Asp His Val Asp  
 3475 3480 3485



SEQLIST-20480.TXT

Ile Leu Gly Pro Leu Ser Ala Gln Thr Gly Ile Ala Val Leu Asp Met  
3490 3495 3500

Cys Ala Ala Leu Lys Glu Leu Leu Gln Asn Gly Met Asn Gly Arg Thr  
3505 3510 3515 3520

Ile Leu Gly Ser Thr Ile Leu Glu Asp Glu Phe Thr Pro Phe Asp Val  
3525 3530 3535

Val Arg Gln Cys Ser Gly Val Thr Phe Gln Gly Lys Phe Lys Lys Ile  
3540 3545 3550

Val Lys Gly Thr His His Trp Met Leu Leu Thr Phe Leu Thr Ser Leu  
3555 3560 3565

Leu Ile Leu Val Gln Ser Thr Gln Trp Ser Leu Phe Phe Phe Val Tyr  
3570 3575 3580

Glu Asn Ala Phe Leu Pro Phe Thr Leu Gly Ile Met Ala Ile Ala Ala  
3585 3590 3595 3600

Cys Ala Met Leu Leu Val Lys His Lys His Ala Phe Leu Cys Leu Phe  
3605 3610 3615

Leu Leu Pro Ser Leu Ala Thr Val Ala Tyr Phe Asn Met Val Tyr Met  
3620 3625 3630

Pro Ala Ser Trp Val Met Arg Ile Met Thr Trp Leu Glu Leu Ala Asp  
3635 3640 3645

Thr Ser Leu Ser Gly Tyr Arg Leu Lys Asp Cys Val Met Tyr Ala Ser  
3650 3655 3660

Ala Leu Val Leu Leu Ile Leu Met Thr Ala Arg Thr Val Tyr Asp Asp  
3665 3670 3675 3680

Ala Ala Arg Arg Val Trp Thr Leu Met Asn Val Ile Thr Leu Val Tyr  
3685 3690 3695

Lys Val Tyr Tyr Gly Asn Ala Leu Asp Gln Ala Ile Ser Met Trp Ala  
3700 3705 3710

Leu Val Ile Ser Val Thr Ser Asn Tyr Ser Gly Val Val Thr Thr Ile  
3715 3720 3725

Met Phe Leu Ala Arg Ala Ile Val Phe Val Cys Val Glu Tyr Tyr Pro  
3730 3735 3740

Leu Leu Phe Ile Thr Gly Asn Thr Leu Gln Cys Ile Met Leu Val Tyr  
3745 3750 3755 3760

Cys Phe Leu Gly Tyr Cys Cys Cys Cys Tyr Phe Gly Leu Phe Cys Leu  
3765 3770 3775

Leu Asn Arg Tyr Phe Arg Leu Thr Leu Gly Val Tyr Asp Tyr Leu Val  
3780 3785 3790

Ser Thr Gln Glu Phe Arg Tyr Met Asn Ser Gln Gly Leu Leu Pro Pro  
3795 3800 3805

Lys Ser Ser Ile Asp Ala Phe Lys Leu Asn Ile Lys Leu Leu Gly Ile  
3810 3815 3820

SEQLIST-20480.TXT

Gly Gly Lys Pro Cys Ile Lys Val Ala Thr Val Gln Ser Lys Met Ser  
3825 3830 3835 3840

Asp Val Lys Cys Thr Ser Val Val Leu Leu Ser Val Leu Gln Gln Leu  
3845 3850 3855

Arg Val Glu Ser Ser Ser Lys Leu Trp Ala Gln Cys Val Gln Leu His  
3860 3865 3870

Asn Asp Ile Leu Leu Ala Lys Asp Thr Thr Glu Ala Phe Glu Lys Met  
3875 3880 3885

Val Ser Leu Leu Ser Val Leu Leu Ser Met Gln Gly Ala Val Asp Ile  
3890 3895 3900

Asn Arg Leu Cys Glu Glu Met Leu Asp Asn Arg Ala Thr Leu Gln Ala  
3905 3910 3915 3920

Ile Ala Ser Glu Phe Ser Ser Leu Pro Ser Tyr Ala Ala Tyr Ala Thr  
3925 3930 3935

Ala Gln Glu Ala Tyr Glu Gln Ala Val Ala Asn Gly Asp Ser Glu Val  
3940 3945 3950

Val Leu Lys Lys Leu Lys Lys Ser Leu Asn Val Ala Lys Ser Glu Phe  
3955 3960 3965

Asp Arg Asp Ala Ala Met Gln Arg Lys Leu Glu Lys Met Ala Asp Gln  
3970 3975 3980

Ala Met Thr Gln Met Tyr Lys Gln Ala Arg Ser Glu Asp Lys Arg Ala  
3985 3990 3995 4000

Lys Val Thr Ser Ala Met Gln Thr Met Leu Phe Thr Met Leu Arg Lys  
4005 4010 4015

Leu Asp Asn Asp Ala Leu Asn Asn Ile Ile Asn Asn Ala Arg Asp Gly  
4020 4025 4030

Cys Val Pro Leu Asn Ile Ile Pro Leu Thr Thr Ala Ala Lys Leu Met  
4035 4040 4045

Val Val Val Pro Asp Tyr Gly Thr Tyr Lys Asn Thr Cys Asp Gly Asn  
4050 4055 4060

Thr Phe Thr Tyr Ala Ser Ala Leu Trp Glu Ile Gln Gln Val Val Asp  
4065 4070 4075 4080

Ala Asp Ser Lys Ile Val Gln Leu Ser Glu Ile Asn Met Asp Asn Ser  
4085 4090 4095

Pro Asn Leu Ala Trp Pro Leu Ile Val Thr Ala Leu Arg Ala Asn Ser  
4100 4105 4110

Ala Val Lys Leu Gln Asn Asn Glu Leu Ser Pro Val Ala Leu Arg Gln  
4115 4120 4125

Met Ser Cys Ala Ala Gly Thr Thr Gln Thr Ala Cys Thr Asp Asp Asn  
4130 4135 4140

Ala Leu Ala Tyr Tyr Asn Asn Ser Lys Gly Gly Arg Phe Val Leu Ala  
4145 4150 4155 4160

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Leu Leu Ser Asp His Gln Asp Leu Lys Trp Ala Arg Phe Pro Lys Ser  
 4165 4170 4175  
 Asp Gly Thr Gly Thr Ile Tyr Thr Glu Leu Glu Pro Pro Cys Arg Phe  
 4180 4185 4190  
 Val Thr Asp Thr Pro Lys Gly Pro Lys Val Lys Tyr Leu Tyr Phe Ile  
 4195 4200 4205  
 Lys Gly Leu Asn Asn Leu Asn Arg Gly Met Val Leu Gly Ser Leu Ala  
 4210 4215 4220  
 Ala Thr Val Arg Leu Gln Ala Gly Asn Ala Thr Glu Val Pro Ala Asn  
 4225 4230 4235 4240  
 Ser Thr Val Leu Ser Phe Cys Ala Phe Ala Val Asp Pro Ala Lys Ala  
 4245 4250 4255  
 Tyr Lys Asp Tyr Leu Ala Ser Gly Gly Gln Pro Ile Thr Asn Cys Val  
 4260 4265 4270  
 Lys Met Leu Cys Thr His Thr Gly Thr Gly Gln Ala Ile Thr Val Thr  
 4275 4280 4285  
 Pro Glu Ala Asn Met Asp Gln Glu Ser Phe Gly Gly Ala Ser Cys Cys  
 4290 4295 4300  
 Leu Tyr Cys Arg Cys His Ile Asp His Pro Asn Pro Lys Gly Phe Cys  
 4305 4310 4315 4320  
 Asp Leu Lys Gly Lys Tyr Val Gln Ile Pro Thr Thr Cys Ala Asn Asp  
 4325 4330 4335  
 Pro Val Gly Phe Thr Leu Arg Asn Thr Val Cys Thr Val Cys Gly Met  
 4340 4345 4350  
 Trp Lys Gly Tyr Gly Cys Ser Cys Asp Gln Leu Arg Glu Pro Leu Met  
 4355 4360 4365  
 Gln Ser Ala Asp Ala Ser Thr Xaa Xaa Xaa Xaa Xaa Xaa Gly Val Ser  
 4370 4375 4380  
 Ala Ala Arg Leu Thr Pro Cys Gly Thr Gly Thr Ser Thr Asp Val Val  
 4385 4390 4395 4400  
 Tyr Arg Ala Phe Asp Ile Tyr Asn Glu Lys Val Ala Gly Phe Ala Lys  
 4405 4410 4415  
 Phe Leu Lys Thr Asn Cys Cys Arg Phe Gln Glu Lys Asp Glu Glu Gly  
 4420 4425 4430  
 Asn Leu Leu Asp Ser Tyr Phe Val Val Lys Arg His Thr Met Ser Asn  
 4435 4440 4445  
 Tyr Gln His Glu Glu Thr Ile Tyr Asn Leu Val Lys Asp Cys Pro Ala  
 4450 4455 4460  
 Val Ala Val His Asp Phe Phe Lys Phe Arg Val Asp Gly Asp Met Val  
 4465 4470 4475 4480  
 Pro His Ile Ser Arg Gln Arg Leu Thr Lys Tyr Thr Met Ala Asp Leu  
 4485 4490 4495

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Val Tyr Ala Leu Arg His Phe Asp Glu Gly Asn Cys Asp Thr Leu Lys  
 4500 4505 4510  
 Glu Ile Leu Val Thr Tyr Asn Cys Cys Asp Asp Asp Tyr Phe Asn Lys  
 4515 4520 4525  
 Lys Asp Trp Tyr Asp Phe Val Glu Asn Pro Asp Ile Leu Arg Val Tyr  
 4530 4535 4540  
 Ala Asn Leu Gly Glu Arg Val Arg Gln Ser Leu Leu Lys Thr Val Gln  
 4545 4550 4555 4560  
 Phe Cys Asp Ala Met Arg Asp Ala Gly Ile Val Gly Val Leu Thr Leu  
 4565 4570 4575  
 Asp Asn Gln Asp Leu Asn Gly Asn Trp Tyr Asp Phe Gly Asp Phe Val  
 4580 4585 4590  
 Gln Val Ala Pro Gly Cys Gly Val Pro Ile Val Asp Ser Tyr Tyr Ser  
 4595 4600 4605  
 Leu Leu Met Pro Ile Leu Thr Leu Thr Arg Ala Leu Ala Ala Glu Ser  
 4610 4615 4620  
 His Met Asp Ala Asp Leu Ala Lys Pro Leu Ile Lys Trp Asp Leu Leu  
 4625 4630 4635 4640  
 Lys Tyr Asp Phe Thr Glu Glu Arg Leu Cys Leu Phe Asp Arg Tyr Phe  
 4645 4650 4655  
 Lys Tyr Trp Asp Gln Thr Tyr His Pro Asn Cys Ile Asn Cys Leu Asp  
 4660 4665 4670  
 Asp Arg Cys Ile Leu His Cys Ala Asn Phe Asn Val Leu Phe Ser Thr  
 4675 4680 4685  
 Val Phe Pro Pro Thr Ser Phe Gly Pro Leu Val Arg Lys Ile Phe Val  
 4690 4695 4700  
 Asp Gly Val Pro Phe Val Val Ser Thr Gly Tyr His Phe Arg Glu Leu  
 4705 4710 4715 4720  
 Gly Val Val His Asn Gln Asp Val Asn Leu His Ser Ser Arg Leu Ser  
 4725 4730 4735  
 Phe Lys Glu Leu Leu Val Tyr Ala Ala Asp Pro Ala Met His Ala Ala  
 4740 4745 4750  
 Ser Gly Asn Leu Leu Leu Asp Lys Arg Thr Thr Cys Phe Ser Val Ala  
 4755 4760 4765  
 Ala Leu Thr Asn Asn Val Ala Phe Gln Thr Val Lys Pro Gly Asn Phe  
 4770 4775 4780  
 Asn Lys Asp Phe Tyr Asp Phe Ala Val Ser Lys Gly Phe Phe Lys Glu  
 4785 4790 4795 4800  
 Gly Ser Ser Val Glu Leu Lys His Phe Phe Phe Ala Gln Asp Gly Asn  
 4805 4810 4815  
 Ala Ala Ile Ser Asp Tyr Asp Tyr Tyr Arg Tyr Asn Leu Pro Thr Met  
 4820 4825 4830

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Cys Asp Ile Arg Gln Leu Leu Phe Val Val Glu Val Val Asp Lys Tyr  
 4835 4840 4845  
 Phe Asp Cys Tyr Asp Gly Gly Cys Ile Asn Ala Asn Gln Val Ile Val  
 4850 4855 4860  
 Asn Asn Leu Asp Lys Ser Ala Gly Phe Pro Phe Asn Lys Trp Gly Lys  
 4865 4870 4875 4880  
 Ala Arg Leu Tyr Tyr Asp Ser Met Ser Tyr Glu Asp Gln Asp Ala Leu  
 4885 4890 4895  
 Phe Ala Tyr Thr Lys Arg Asn Val Ile Pro Thr Ile Thr Gln Met Asn  
 4900 4905 4910  
 Leu Lys Tyr Ala Ile Ser Ala Lys Asn Arg Ala Arg Thr Val Ala Gly  
 4915 4920 4925  
 Val Ser Ile Cys Ser Thr Met Thr Asn Arg Gln Phe His Gln Lys Leu  
 4930 4935 4940  
 Leu Lys Ser Ile Ala Ala Thr Arg Gly Ala Thr Val Val Ile Gly Thr  
 4945 4950 4955 4960  
 Ser Lys Phe Tyr Gly Gly Trp His Asn Met Leu Lys Thr Val Tyr Ser  
 4965 4970 4975  
 Asp Val Glu Thr Pro His Leu Met Gly Trp Asp Tyr Pro Lys Cys Asp  
 4980 4985 4990  
 Arg Ala Met Pro Asn Met Leu Arg Ile Met Ala Ser Leu Val Leu Ala  
 4995 5000 5005  
 Arg Lys His Asn Thr Cys Cys Asn Leu Ser His Arg Phe Tyr Arg Leu  
 5010 5015 5020  
 Ala Asn Glu Cys Ala Gln Val Leu Ser Glu Met Val Met Cys Gly Gly  
 5025 5030 5035 5040  
 Ser Leu Tyr Val Lys Pro Gly Gly Thr Ser Ser Gly Asp Ala Thr Thr  
 5045 5050 5055  
 Ala Tyr Ala Asn Ser Val Phe Asn Ile Cys Gln Ala Val Thr Ala Asn  
 5060 5065 5070  
 Val Asn Ala Leu Leu Ser Thr Asp Gly Asn Lys Ile Ala Asp Lys Tyr  
 5075 5080 5085  
 Val Arg Asn Leu Gln His Arg Leu Tyr Glu Cys Leu Tyr Arg Asn Arg  
 5090 5095 5100  
 Asp Val Asp His Glu Phe Val Asp Glu Phe Tyr Ala Tyr Leu Arg Lys  
 5105 5110 5115 5120  
 His Phe Ser Met Met Ile Leu Ser Asp Asp Ala Val Val Cys Tyr Asn  
 5125 5130 5135  
 Ser Asn Tyr Ala Ala Gln Gly Leu Val Ala Ser Ile Lys Asn Phe Lys  
 5140 5145 5150  
 Ala Val Leu Tyr Tyr Gln Asn Asn Val Phe Met Ser Glu Ala Lys Cys  
 5155 5160 5165

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Trp Thr Glu Thr Asp Leu Thr Lys Gly Pro His Glu Phe Cys Ser Gln  
 5170 5175 5180  
 His Thr Met Leu Val Lys Gln Gly Asp Asp Tyr Val Tyr Leu Pro Tyr  
 5185 5190 5195 5200  
 Pro Asp Pro Ser Arg Ile Leu Gly Ala Gly Cys Phe Val Asp Asp Ile  
 5205 5210 5215  
 Val Lys Thr Asp Gly Thr Leu Met Ile Glu Arg Phe Val Ser Leu Ala  
 5220 5225 5230  
 Ile Asp Ala Tyr Pro Leu Thr Lys His Pro Asn Gln Glu Tyr Ala Asp  
 5235 5240 5245  
 Val Phe His Leu Tyr Leu Gln Tyr Ile Arg Lys Leu His Asp Glu Leu  
 5250 5255 5260  
 Thr Gly His Met Leu Asp Met Tyr Ser Val Met Leu Thr Asn Asp Asn  
 5265 5270 5275 5280  
 Thr Ser Arg Tyr Trp Glu Pro Glu Phe Tyr Glu Ala Met Tyr Thr Pro  
 5285 5290 5295  
 His Thr Val Leu Gln Ala Val Gly Ala Cys Val Leu Cys Asn Ser Gln  
 5300 5305 5310  
 Thr Ser Leu Arg Cys Gly Ala Cys Ile Arg Arg Pro Phe Leu Cys Cys  
 5315 5320 5325  
 Lys Cys Cys Tyr Asp His Val Ile Ser Thr Ser His Lys Leu Val Leu  
 5330 5335 5340  
 Ser Val Asn Pro Tyr Val Cys Asn Ala Pro Gly Cys Asp Val Thr Asp  
 5345 5350 5355 5360  
 Val Thr Gln Leu Tyr Leu Gly Gly Met Ser Tyr Tyr Cys Lys Ser His  
 5365 5370 5375  
 Lys Pro Pro Ile Ser Phe Pro Leu Cys Ala Asn Gly Gln Val Phe Gly  
 5380 5385 5390  
 Leu Tyr Lys Asn Thr Cys Val Gly Ser Asp Asn Val Thr Asp Phe Asn  
 5395 5400 5405  
 Ala Ile Ala Thr Cys Asp Trp Thr Asn Ala Gly Asp Tyr Ile Leu Ala  
 5410 5415 5420  
 Asn Thr Cys Thr Glu Arg Leu Lys Leu Phe Ala Ala Glu Thr Leu Lys  
 5425 5430 5435 5440  
 Ala Thr Glu Glu Thr Phe Lys Leu Ser Tyr Gly Ile Ala Thr Val Arg  
 5445 5450 5455  
 Glu Val Leu Ser Asp Arg Glu Leu His Leu Ser Trp Glu Val Gly Lys  
 5460 5465 5470  
 Pro Arg Pro Pro Leu Asn Arg Asn Tyr Val Phe Thr Gly Tyr Arg Val  
 5475 5480 5485  
 Thr Lys Asn Ser Lys Val Gln Ile Gly Glu Tyr Thr Phe Glu Lys Gly  
 5490 5495 5500

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Asp Tyr Gly Asp Ala Val Val Tyr Arg Gly Thr Thr Thr Tyr Lys Leu  
 5505 5510 5515 5520  
 Asn Val Gly Asp Tyr Phe Val Leu Thr Ser His Thr Val Met Pro Leu  
 5525 5530 5535  
 Ser Ala Pro Thr Leu Val Pro Gln Glu His Tyr Val Arg Ile Thr Gly  
 5540 5545 5550  
 Leu Tyr Pro Thr Leu Asn Ile Ser Asp Glu Phe Ser Ser Asn Val Ala  
 5555 5560 5565  
 Asn Tyr Gln Lys Val Gly Met Gln Lys Tyr Ser Thr Leu Gln Gly Pro  
 5570 5575 5580  
 Pro Gly Thr Gly Lys Ser His Phe Ala Ile Gly Leu Ala Leu Tyr Tyr  
 5585 5590 5595 5600  
 Pro Ser Ala Arg Ile Val Tyr Thr Ala Cys Ser His Ala Ala Val Asp  
 5605 5610 5615  
 Ala Leu Cys Glu Lys Ala Leu Lys Tyr Leu Pro Ile Asp Lys Cys Ser  
 5620 5625 5630  
 Arg Ile Ile Pro Ala Arg Ala Arg Val Glu Cys Phe Asp Lys Phe Lys  
 5635 5640 5645  
 Val Asn Ser Thr Leu Glu Gln Tyr Val Phe Cys Thr Val Asn Ala Leu  
 5650 5655 5660  
 Pro Glu Thr Thr Ala Asp Ile Val Val Phe Asp Glu Ile Ser Met Ala  
 5665 5670 5675 5680  
 Thr Asn Tyr Asp Leu Ser Val Val Asn Ala Arg Leu Arg Ala Lys His  
 5685 5690 5695  
 Tyr Val Tyr Ile Gly Asp Pro Ala Gln Leu Pro Ala Pro Arg Thr Leu  
 5700 5705 5710  
 Leu Thr Lys Gly Thr Leu Glu Pro Glu Tyr Phe Asn Ser Val Cys Arg  
 5715 5720 5725  
 Leu Met Lys Thr Ile Gly Pro Asp Met Phe Leu Gly Thr Cys Arg Arg  
 5730 5735 5740  
 Cys Pro Ala Glu Ile Val Asp Thr Val Ser Ala Leu Val Tyr Asp Asn  
 5745 5750 5755 5760  
 Lys Leu Lys Ala His Lys Asp Lys Ser Ala Gln Cys Phe Lys Met Phe  
 5765 5770 5775  
 Tyr Lys Gly Val Ile Thr His Asp Val Ser Ser Ala Ile Asn Arg Pro  
 5780 5785 5790  
 Gln Ile Gly Val Val Arg Glu Phe Leu Thr Arg Asn Pro Ala Trp Arg  
 5795 5800 5805  
 Lys Ala Val Phe Ile Ser Pro Tyr Asn Ser Gln Asn Ala Val Ala Ser  
 5810 5815 5820  
 Lys Ile Leu Gly Leu Pro Thr Gln Thr Val Asp Ser Ser Gln Gly Ser  
 5825 5830 5835 5840

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Glu Tyr Asp Tyr Val Ile Phe Thr Gln Thr Thr Glu Thr Ala His Ser  
 5845 5850 5855  
 Cys Asn Val Asn Arg Phe Asn Val Ala Ile Thr Arg Ala Lys Ile Gly  
 5860 5865 5870  
 Ile Leu Cys Ile Met Ser Asp Arg Asp Leu Tyr Asp Lys Leu Gln Phe  
 5875 5880 5885  
 Thr Ser Leu Glu Ile Pro Arg Arg Asn Val Ala Thr Leu Gln Ala Glu  
 5890 5895 5900  
 Asn Val Thr Gly Leu Phe Lys Asp Cys Ser Lys Ile Ile Thr Gly Leu  
 5905 5910 5915 5920  
 His Pro Thr Gln Ala Pro Thr His Leu Ser Val Asp Ile Lys Phe Lys  
 5925 5930 5935  
 Thr Glu Gly Leu Cys Val Asp Ile Pro Gly Ile Pro Lys Asp Met Thr  
 5940 5945 5950  
 Tyr Arg Arg Leu Ile Ser Met Met Gly Phe Lys Met Asn Tyr Gln Val  
 5955 5960 5965  
 Asn Gly Tyr Pro Asn Met Phe Ile Thr Arg Glu Glu Ala Ile Arg His  
 5970 5975 5980  
 Val Arg Ala Trp Ile Gly Phe Asp Val Glu Gly Cys His Ala Thr Arg  
 5985 5990 5995 6000  
 Asp Ala Val Gly Thr Asn Leu Pro Leu Gln Leu Gly Phe Ser Thr Gly  
 6005 6010 6015  
 Val Asn Leu Val Ala Val Pro Thr Gly Tyr Val Asp Thr Glu Asn Asn  
 6020 6025 6030  
 Thr Glu Phe Thr Arg Val Asn Ala Lys Pro Pro Pro Gly Asp Gln Phe  
 6035 6040 6045  
 Lys His Leu Ile Pro Leu Met Tyr Lys Gly Leu Pro Trp Asn Val Val  
 6050 6055 6060  
 Arg Ile Lys Ile Val Gln Met Leu Ser Asp Thr Leu Lys Gly Leu Ser  
 6065 6070 6075 6080  
 Asp Arg Val Val Phe Val Leu Trp Ala His Gly Phe Glu Leu Thr Ser  
 6085 6090 6095  
 Met Lys Tyr Phe Val Lys Ile Gly Pro Glu Arg Thr Cys Cys Leu Cys  
 6100 6105 6110  
 Asp Lys Arg Ala Thr Cys Phe Ser Thr Ser Ser Asp Thr Tyr Ala Cys  
 6115 6120 6125  
 Trp Asn His Ser Val Gly Phe Asp Tyr Val Tyr Asn Pro Phe Met Ile  
 6130 6135 6140  
 Asp Val Gln Gln Trp Gly Phe Thr Gly Asn Leu Gln Ser Asn His Asp  
 6145 6150 6155 6160  
 Gln His Cys Gln Val His Gly Asn Ala His Val Ala Ser Cys Asp Ala  
 6165 6170 6175



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Ile Met Thr Arg Cys Leu Ala Val His Glu Cys Phe Val Lys Arg Val  
6180 6185 6190

Asp Trp Ser Val Glu Tyr Pro Ile Ile Gly Asp Glu Leu Arg Val Asn  
6195 6200 6205

Ser Ala Cys Arg Lys Val Gln His Met Val Val Lys Ser Ala Leu Leu  
6210 6215 6220

Ala Asp Lys Phe Pro Val Leu His Asp Ile Gly Asn Pro Lys Ala Ile  
6225 6230 6235 6240

Lys Cys Val Pro Gln Ala Glu Val Glu Trp Lys Phe Tyr Asp Ala Gln  
6245 6250 6255

Pro Cys Ser Asp Lys Ala Tyr Lys Ile Glu Glu Leu Phe Tyr Ser Tyr  
6260 6265 6270

Ala Thr His His Asp Lys Phe Thr Asp Gly Val Cys Leu Phe Trp Asn  
6275 6280 6285

Cys Asn Val Asp Arg Tyr Pro Ala Asn Ala Ile Val Cys Arg Phe Asp  
6290 6295 6300

Thr Arg Val Leu Ser Asn Leu Asn Leu Pro Gly Cys Asp Gly Gly Ser  
6305 6310 6315 6320

Leu Tyr Val Asn Lys His Ala Phe His Thr Pro Ala Phe Asp Lys Ser  
6325 6330 6335

Ala Phe Thr Asn Leu Lys Gln Leu Pro Phe Phe Tyr Tyr Ser Asp Ser  
6340 6345 6350

Pro Cys Glu Ser His Gly Lys Gln Val Val Ser Asp Ile Asp Tyr Val  
6355 6360 6365

Pro Leu Lys Ser Ala Thr Cys Ile Thr Arg Cys Asn Leu Gly Gly Ala  
6370 6375 6380

Val Cys Arg His His Ala Asn Glu Tyr Arg Gln Tyr Leu Asp Ala Tyr  
6385 6390 6395 6400

Asn Met Met Ile Ser Ala Gly Phe Ser Leu Trp Ile Tyr Lys Gln Phe  
6405 6410 6415

Asp Thr Tyr Asn Leu Trp Asn Thr Phe Thr Arg Leu Gln Ser Leu Glu  
6420 6425 6430

Asn Val Ala Tyr Asn Val Val Asn Lys Gly His Phe Asp Gly His Ala  
6435 6440 6445

Gly Glu Ala Pro Val Ser Ile Ile Asn Asn Ala Val Tyr Thr Lys Val  
6450 6455 6460

Asp Gly Ile Asp Val Glu Ile Phe Glu Asn Lys Thr Thr Leu Pro Val  
6465 6470 6475 6480

Asn Val Ala Phe Glu Leu Trp Ala Lys Arg Asn Ile Lys Pro Val Pro  
6485 6490 6495

Glu Ile Lys Ile Leu Asn Asn Leu Gly Val Asp Ile Ala Ala Asn Thr  
6500 6505 6510

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Val Ile Trp Asp Tyr Lys Arg Glu Ala Pro Ala His Val Ser Thr Ile  
 6515 6520 6525  
 Gly Val Cys Thr Met Thr Asp Ile Ala Lys Lys Pro Thr Glu Ser Ala  
 6530 6535 6540  
 Cys Ser Ser Leu Thr Val Leu Phe Asp Gly Arg Val Glu Gly Gln Val  
 6545 6550 6555 6560  
 Asp Leu Phe Arg Asn Ala Arg Asn Gly Val Leu Ile Thr Glu Gly Ser  
 6565 6570 6575  
 Val Lys Gly Leu Thr Pro Ser Lys Gly Pro Ala Gln Ala Ser Val Asn  
 6580 6585 6590  
 Gly Val Thr Leu Ile Gly Glu Ser Val Lys Thr Gln Phe Asn Tyr Phe  
 6595 6600 6605  
 Lys Lys Val Asp Gly Ile Ile Gln Gln Leu Pro Glu Thr Tyr Phe Thr  
 6610 6615 6620  
 Gln Ser Arg Asp Leu Glu Asp Phe Lys Pro Arg Ser Gln Met Glu Thr  
 6625 6630 6635 6640  
 Asp Phe Leu Glu Leu Ala Met Asp Glu Phe Ile Gln Arg Tyr Lys Leu  
 6645 6650 6655  
 Glu Gly Tyr Ala Phe Glu His Ile Val Tyr Gly Asp Phe Ser His Gly  
 6660 6665 6670  
 Gln Leu Gly Gly Leu His Leu Met Ile Gly Leu Ala Lys Arg Ser Gln  
 6675 6680 6685  
 Asp Ser Pro Leu Lys Leu Glu Asp Phe Ile Pro Met Asp Ser Thr Val  
 6690 6695 6700  
 Lys Asn Tyr Phe Ile Thr Asp Ala Gln Thr Gly Ser Ser Lys Cys Val  
 6705 6710 6715 6720  
 Cys Ser Val Ile Asp Leu Leu Leu Asp Asp Phe Val Glu Ile Ile Lys  
 6725 6730 6735  
 Ser Gln Asp Leu Ser Val Ile Ser Lys Val Val Lys Val Thr Ile Asp  
 6740 6745 6750  
 Tyr Ala Glu Ile Ser Phe Met Leu Trp Cys Lys Asp Gly His Val Glu  
 6755 6760 6765  
 Thr Phe Tyr Pro Lys Leu Gln Ala Ser Arg Ala Trp Gln Pro Gly Val  
 6770 6775 6780  
 Ala Met Pro Asn Leu Tyr Lys Met Gln Arg Met Leu Leu Glu Lys Cys  
 6785 6790 6795 6800  
 Asp Leu Gln Asn Tyr Gly Glu Asn Ala Val Ile Pro Lys Gly Ile Met  
 6805 6810 6815  
 Met Asn Val Ala Lys Tyr Thr Gln Leu Cys Gln Tyr Leu Asn Thr Leu  
 6820 6825 6830  
 Thr Leu Ala Val Pro Tyr Asn Met Arg Val Ile His Phe Gly Ala Gly  
 6835 6840 6845

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Ser Asp Lys Gly Val Ala Pro Gly Thr Ala Val Leu Arg Gln Trp Leu  
6850 6855 6860

Pro Thr Gly Thr Leu Leu Val Asp Ser Asp Leu Asn Asp Phe Val Ser  
6865 6870 6875 6880

Asp Ala Tyr Ser Thr Leu Ile Gly Asp Cys Ala Thr Val His Thr Ala  
6885 6890 6895

Asn Lys Trp Asp Leu Ile Ile Ser Asp Met Tyr Asp Pro Arg Thr Lys  
6900 6905 6910

His Val Thr Lys Glu Asn Asp Ser Lys Glu Gly Phe Phe Thr Tyr Leu  
6915 6920 6925

Cys Gly Phe Ile Lys Gln Lys Leu Ala Leu Gly Gly Ser Ile Ala Val  
6930 6935 6940

Lys Ile Thr Glu His Ser Trp Asn Ala Asp Leu Tyr Lys Leu Met Gly  
6945 6950 6955 6960

His Phe Ser Trp Trp Thr Ala Phe Val Thr Asn Val Asn Ala Ser Ser  
6965 6970 6975

Ser Glu Ala Phe Leu Ile Gly Ala Asn Tyr Leu Gly Lys Pro Lys Glu  
6980 6985 6990

Gln Ile Asp Gly Tyr Thr Met His Ala Asn Tyr Ile Phe Trp Arg Asn  
6995 7000 7005

Thr Asn Pro Ile Gln Leu Ser Ser Tyr Ser Leu Phe Asp Met Ser Lys  
7010 7015 7020

Phe Pro Leu Lys Leu Arg Gly Thr Ala Val Met Ser Leu Lys Glu Asn  
7025 7030 7035 7040

Gln Ile Asn Asp Met Ile Tyr Ser Leu Leu Glu Lys Gly Arg Leu Ile  
7045 7050 7055

Ile Arg Glu Asn Asn Arg Val Val Val Ser Ser Asp Ile Leu Val Asn  
7060 7065 7070

Asn

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<212> PRT  
<213> SARS coronavirus

<220>  
<221> misc\_feature  
<222> 4376...4382  
<223> Xaa is any amino acid

<400> 7241  
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1 5 10 15

Ser Leu Pro Val Leu Gln Val Arg Asp Val Leu Val Arg Gly Phe Gly  
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|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Ser | Val | Glu | Glu | Ala | Leu | Ser | Glu | Ala | Arg | Glu | His | Leu | Lys | Asn |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Gly | Thr | Cys | Gly | Leu | Val | Glu | Leu | Glu | Lys | Gly | Val | Leu | Pro | Gln | Leu |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Glu | Gln | Pro | Tyr | Val | Phe | Ile | Lys | Arg | Ser | Asp | Ala | Leu | Ser | Thr | Asn |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |
| His | Gly | His | Lys | Val | Val | Glu | Leu | Val | Ala | Glu | Met | Asp | Gly | Ile | Gln |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Tyr | Gly | Arg | Ser | Gly | Ile | Thr | Leu | Gly | Val | Leu | Val | Pro | His | Val | Gly |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Glu | Thr | Pro | Ile | Ala | Tyr | Arg | Asn | Val | Leu | Leu | Arg | Lys | Asn | Gly | Asn |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Lys | Gly | Ala | Gly | Gly | His | Ser | Tyr | Gly | Ile | Asp | Leu | Lys | Ser | Tyr | Asp |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| Leu | Gly | Asp | Glu | Leu | Gly | Thr | Asp | Pro | Ile | Glu | Asp | Tyr | Glu | Gln | Asn |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |
| Trp | Asn | Thr | Lys | His | Gly | Ser | Gly | Ala | Leu | Arg | Glu | Leu | Thr | Arg | Glu |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Leu | Asn | Gly | Gly | Ala | Val | Thr | Arg | Tyr | Val | Asp | Asn | Asn | Phe | Cys | Gly |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Pro | Asp | Gly | Tyr | Pro | Leu | Asp | Cys | Ile | Lys | Asp | Phe | Leu | Ala | Arg | Ala |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Gly | Lys | Ser | Met | Cys | Thr | Leu | Ser | Glu | Gln | Leu | Asp | Tyr | Ile | Glu | Ser |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Lys | Arg | Gly | Val | Tyr | Cys | Cys | Arg | Asp | His | Glu | His | Glu | Ile | Ala | Trp |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
| Phe | Thr | Glu | Arg | Ser | Asp | Lys | Ser | Tyr | Glu | His | Gln | Thr | Pro | Phe | Glu |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |
| Ile | Lys | Ser | Ala | Lys | Lys | Phe | Asp | Thr | Phe | Lys | Gly | Glu | Cys | Pro | Lys |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
| Phe | Val | Phe | Pro | Leu | Asn | Ser | Lys | Val | Lys | Val | Ile | Gln | Pro | Arg | Val |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
| Glu | Lys | Lys | Lys | Thr | Glu | Gly | Phe | Met | Gly | Arg | Ile | Arg | Ser | Val | Tyr |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Pro | Val | Ala | Ser | Pro | Gln | Glu | Cys | Asn | Asn | Met | His | Leu | Ser | Thr | Leu |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |
| Met | Lys | Cys | Asn | His | Cys | Asp | Glu | Val | Ser | Trp | Gln | Thr | Cys | Asp | Phe |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |
| Leu | Lys | Ala | Thr | Cys | Glu | His | Cys | Gly | Thr | Glu | Asn | Leu | Val | Ile | Glu |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |
| Gly | Pro | Thr | Thr | Cys | Gly | Tyr | Leu | Pro | Thr | Asn | Ala | Val | Val | Lys | Met |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |

SEQLIST-20480.TXT

Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val  
370 375 380  
Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly  
385 390 395 400  
Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys  
405 410 415  
Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly  
420 425 430  
Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu  
435 440 445  
Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val  
450 455 460  
Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe  
465 470 475 480  
Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr  
485 490 495  
Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr  
500 505 510  
Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser  
515 520 525  
Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala Ala Gly Val Ile  
530 535 540  
Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pro  
545 550 555 560  
Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln  
565 570 575  
Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser Asp Leu Leu Thr  
580 585 590  
Asn Ser Val Ile Ile Met Ala Tyr Val Thr Gly Gly Leu Val Gln Gln  
595 600 605  
Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr Val Glu Lys Leu  
610 615 620  
Arg Pro Ile Phe Glu Trp Ile Glu Ala Lys Leu Ser Ala Gly Val Glu  
625 630 635 640  
Phe Leu Lys Asp Ala Trp Glu Ile Leu Lys Phe Leu Ile Thr Gly Val  
645 650 655  
Phe Asp Ile Val Lys Gly Gln Ile Gln Val Ala Ser Asp Asn Ile Lys  
660 665 670  
Asp Cys Val Lys Cys Phe Ile Asp Val Val Asn Lys Ala Leu Glu Met  
675 680 685  
Cys Ile Asp Gln Val Thr Ile Ala Gly Ala Lys Leu Arg Ser Leu Asn  
690 695 700

SEQLIST-20480.TXT

Leu Gly Glu Val Phe Ile Ala Gln Ser Lys Gly Leu Tyr Arg Gln Cys  
 705 710 715 720  
 Ile Arg Gly Lys Glu Gln Leu Gln Leu Leu Met Pro Leu Lys Ala Pro  
 725 730 735  
 Lys Glu Val Thr Phe Leu Glu Gly Asp Ser His Asp Thr Val Leu Thr  
 740 745 750  
 Ser Glu Glu Val Val Leu Lys Asn Gly Glu Leu Glu Ala Leu Glu Thr  
 755 760 765  
 Pro Val Asp Ser Phe Thr Asn Gly Ala Ile Val Gly Thr Pro Val Cys  
 770 775 780  
 Val Asn Gly Leu Met Leu Leu Glu Ile Lys Asp Lys Glu Gln Tyr Cys  
 785 790 795 800  
 Ala Leu Ser Pro Gly Leu Leu Ala Thr Asn Asn Val Phe Arg Leu Lys  
 805 810 815  
 Gly Gly Ala Pro Ile Lys Gly Val Thr Phe Gly Glu Asp Thr Val Trp  
 820 825 830  
 Glu Val Gln Gly Tyr Lys Asn Val Arg Ile Thr Phe Glu Leu Asp Glu  
 835 840 845  
 Arg Val Asp Lys Val Leu Asn Glu Lys Cys Ser Val Tyr Thr Val Glu  
 850 855 860  
 Ser Gly Thr Glu Val Thr Glu Phe Ala Cys Val Val Ala Glu Ala Val  
 865 870 875 880  
 Val Lys Thr Leu Gln Pro Val Ser Asp Leu Leu Thr Asn Met Gly Ile  
 885 890 895  
 Asp Leu Asp Glu Trp Ser Val Ala Thr Phe Tyr Leu Phe Asp Asp Ala  
 900 905 910  
 Gly Glu Glu Asn Phe Ser Ser Arg Met Tyr Cys Ser Phe Tyr Pro Pro  
 915 920 925  
 Asp Glu Glu Glu Glu Asp Asp Ala Glu Cys Glu Glu Glu Glu Ile Asp  
 930 935 940  
 Glu Thr Cys Glu His Glu Tyr Gly Thr Glu Asp Asp Tyr Gln Gly Leu  
 945 950 955 960  
 Pro Leu Glu Phe Gly Ala Ser Ala Glu Thr Val Arg Val Glu Glu Glu  
 965 970 975  
 Glu Glu Glu Asp Trp Leu Asp Asp Thr Thr Glu Gln Ser Glu Ile Glu  
 980 985 990  
 Pro Glu Pro Glu Pro Thr Pro Glu Glu Pro Val Asn Gln Phe Thr Gly  
 995 1000 1005  
 Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Ile Val  
 1010 1015 1020  
 Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala Ala Asn  
 1025 1030 1035 1040

SEQLIST-20480.TXT

Ile His Leu Lys His Gly Gly Gly Val Ala Gly Ala Leu Asn Lys Ala  
1045 1050 1055

Thr Asn Gly Ala Met Gln Lys Glu Ser Asp Asp Tyr Ile Lys Leu Asn  
1060 1065 1070

Gly Pro Leu Thr Val Gly Gly Ser Cys Leu Leu Ser Gly His Asn Leu  
1075 1080 1085

Ala Lys Lys Cys Leu His Val Val Gly Pro Asn Leu Asn Ala Gly Glu  
1090 1095 1100

Asp Ile Gln Leu Leu Lys Ala Ala Tyr Glu Asn Phe Asn Ser Gln Asp  
1105 1110 1115 1120

Ile Leu Leu Ala Pro Leu Leu Ser Ala Gly Ile Phe Gly Ala Lys Pro  
1125 1130 1135

Leu Gln Ser Leu Gln Val Cys Val Gln Thr Val Arg Thr Gln Val Tyr  
1140 1145 1150

Ile Ala Val Asn Asp Lys Ala Leu Tyr Glu Gln Val Val Met Asp Tyr  
1155 1160 1165

Leu Asp Asn Leu Lys Pro Arg Val Glu Ala Pro Lys Gln Glu Glu Pro  
1170 1175 1180

Pro Asn Thr Glu Asp Ser Lys Thr Glu Glu Lys Ser Val Val Gln Lys  
1185 1190 1195 1200

Pro Val Asp Val Lys Pro Lys Ile Lys Ala Cys Ile Asp Glu Val Thr  
1205 1210 1215

Thr Thr Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys Leu Leu Leu Phe  
1220 1225 1230

Ala Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln Asn Met Leu Arg  
1235 1240 1245

Gly Glu Asp Met Ser Phe Leu Glu Lys Asp Ala Pro Tyr Met Val Gly  
1250 1255 1260

Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val Ile Pro Ser Lys  
1265 1270 1275 1280

Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala Leu Lys Lys Val  
1285 1290 1295

Pro Val Asp Glu Tyr Ile Thr Thr Tyr Pro Gly Gln Gly Cys Ala Gly  
1300 1305 1310

Tyr Thr Leu Glu Glu Ala Lys Thr Ala Leu Lys Lys Cys Lys Ser Ala  
1315 1320 1325

Phe Tyr Val Leu Pro Ser Glu Ala Pro Asn Ala Lys Glu Glu Ile Leu  
1330 1335 1340

Gly Thr Val Ser Trp Asn Leu Arg Glu Met Leu Ala His Ala Glu Glu  
1345 1350 1355 1360

Thr Arg Lys Leu Met Pro Ile Cys Met Asp Val Arg Ala Ile Met Ala  
1365 1370 1375

SEQLIST-20480.TXT

Thr Ile Gln Arg Lys Tyr Lys Gly Ile Lys Ile Gln Glu Gly Ile Val  
1380 1385 1390

Asp Tyr Gly Val Arg Phe Phe Phe Tyr Thr Ser Lys Glu Pro Val Ala  
1395 1400 1405

Ser Ile Ile Thr Lys Leu Asn Ser Leu Asn Glu Pro Leu Val Thr Met  
1410 1415 1420

Pro Ile Gly Tyr Val Thr His Gly Phe Asn Leu Glu Glu Ala Ala Arg  
1425 1430 1435 1440

Cys Met Arg Ser Leu Lys Ala Pro Ala Val Val Ser Val Ser Ser Pro  
1445 1450 1455

Asp Ala Val Thr Tyr Asn Gly Tyr Leu Thr Ser Ser Ser Lys Thr  
1460 1465 1470

Ser Glu Glu His Phe Val Glu Thr Val Ser Leu Ala Gly Ser Tyr Arg  
1475 1480 1485

Asp Trp Ser Tyr Ser Gly Gln Arg Thr Glu Leu Gly Val Glu Phe Leu  
1490 1495 1500

Lys Arg Gly Asp Lys Ile Val Tyr His Thr Leu Glu Ser Pro Val Glu  
1505 1510 1515 1520

Phe His Leu Asp Gly Glu Val Leu Ser Leu Asp Lys Leu Lys Ser Leu  
1525 1530 1535

Leu Ser Leu Arg Glu Val Lys Thr Ile Lys Val Phe Thr Thr Val Asp  
1540 1545 1550

Asn Thr Asn Leu His Thr Gln Leu Val Asp Met Ser Met Thr Tyr Gly  
1555 1560 1565

Gln Gln Phe Gly Pro Thr Tyr Leu Asp Gly Ala Asp Val Thr Lys Ile  
1570 1575 1580

Lys Pro His Val Asn His Glu Gly Lys Thr Phe Phe Val Leu Pro Ser  
1585 1590 1595 1600

Asp Asp Thr Leu Arg Ser Glu Ala Phe Glu Tyr Tyr His Thr Leu Asp  
1605 1610 1615

Glu Ser Phe Leu Gly Arg Tyr Met Ser Ala Leu Asn His Thr Lys Lys  
1620 1625 1630

Trp Lys Phe Pro Gln Val Gly Gly Leu Thr Ser Ile Lys Trp Ala Asp  
1635 1640 1645

Asn Asn Cys Tyr Leu Ser Ser Val Leu Leu Ala Leu Gln Gln Leu Glu  
1650 1655 1660

Val Lys Phe Asn Ala Pro Ala Leu Gln Glu Ala Tyr Tyr Arg Ala Arg  
1665 1670 1675 1680

Ala Gly Asp Ala Ala Asn Phe Cys Ala Leu Ile Leu Ala Tyr Ser Asn  
1685 1690 1695

Lys Thr Val Gly Glu Leu Gly Asp Val Arg Glu Thr Met Thr His Leu  
1700 1705 1710



SEQLIST-20480.TXT

Leu Gln His Ala Asn Leu Glu Ser Ala Lys Arg Val Leu Asn Val Val  
1715 1720 1725

Cys Lys His Cys Gly Gln Lys Thr Thr Thr Leu Thr Gly Val Glu Ala  
1730 1735 1740

Val Met Tyr Met Gly Thr Leu Ser Tyr Asp Asn Leu Lys Thr Gly Val  
1745 1750 1755 1760

Ser Ile Pro Cys Val Cys Gly Arg Asp Ala Thr Gln Tyr Leu Val Gln  
1765 1770 1775

Gln Glu Ser Ser Phe Val Met Met Ser Ala Pro Pro Ala Glu Tyr Lys  
1780 1785 1790

Leu Gln Gln Gly Thr Phe Leu Cys Ala Asn Glu Tyr Thr Gly Asn Tyr  
1795 1800 1805

Gln Cys Gly His Tyr Thr His Ile Thr Ala Lys Glu Thr Leu Tyr Arg  
1810 1815 1820

Ile Asp Gly Ala His Leu Thr Lys Met Ser Glu Tyr Lys Gly Pro Val  
1825 1830 1835 1840

Thr Asp Val Phe Tyr Lys Glu Thr Ser Tyr Thr Thr Thr Ile Lys Pro  
1845 1850 1855

Val Ser Tyr Lys Leu Asp Gly Val Thr Tyr Thr Glu Ile Glu Pro Lys  
1860 1865 1870

Leu Asp Gly Tyr Tyr Lys Lys Asp Asn Ala Tyr Tyr Thr Glu Gln Pro  
1875 1880 1885

Ile Asp Leu Val Pro Thr Gln Pro Leu Pro Asn Ala Ser Phe Asp Asn  
1890 1895 1900

Phe Lys Leu Thr Cys Ser Asn Thr Lys Phe Ala Asp Asp Leu Asn Gln  
1905 1910 1915 1920

Met Thr Gly Phe Thr Lys Pro Ala Ser Arg Glu Leu Ser Val Thr Phe  
1925 1930 1935

Phe Pro Asp Leu Asn Gly Asp Val Val Ala Ile Asp Tyr Arg His Tyr  
1940 1945 1950

Ser Ala Ser Phe Lys Lys Gly Ala Lys Leu Leu His Lys Pro Ile Val  
1955 1960 1965

Trp His Ile Asn Gln Ala Thr Thr Lys Thr Thr Phe Lys Pro Asn Thr  
1970 1975 1980

Trp Cys Leu Arg Cys Leu Trp Ser Thr Lys Pro Val Asp Thr Ser Asn  
1985 1990 1995 2000

Ser Phe Glu Val Leu Ala Val Glu Asp Thr Gln Gly Met Asp Asn Leu  
2005 2010 2015

Ala Cys Glu Ser Gln Gln Pro Thr Ser Glu Glu Val Val Glu Asn Pro  
2020 2025 2030

Thr Ile Gln Lys Glu Val Ile Glu Cys Asp Val Lys Thr Thr Glu Val  
2035 2040 2045

SEQLIST-20480.TXT

Val Gly Asn Val Ile Leu Lys Pro Ser Asp Glu Gly Val Lys Val Thr  
2050 2055 2060

Gln Glu Leu Gly His Glu Asp Leu Met Ala Ala Tyr Val Glu Asn Thr  
2065 2070 2075 2080

Ser Ile Thr Ile Lys Lys Pro Asn Glu Leu Ser Leu Ala Leu Gly Leu  
2085 2090 2095

Lys Thr Ile Ala Thr His Gly Ile Ala Ala Ile Asn Ser Val Pro Trp  
2100 2105 2110

Ser Lys Ile Leu Ala Tyr Val Lys Pro Phe Leu Gly Gln Ala Ala Ile  
2115 2120 2125

Thr Thr Ser Asn Cys Ala Lys Arg Leu Ala Gln Arg Val Phe Asn Asn  
2130 2135 2140

Tyr Met Pro Tyr Val Phe Thr Leu Leu Phe Gln Leu Cys Thr Phe Thr  
2145 2150 2155 2160

Lys Ser Thr Asn Ser Arg Ile Arg Ala Ser Leu Pro Thr Thr Ile Ala  
2165 2170 2175

Lys Asn Ser Val Lys Ser Val Ala Lys Leu Cys Leu Asp Ala Gly Ile  
2180 2185 2190

Asn Tyr Val Lys Ser Pro Lys Phe Ser Lys Leu Phe Thr Ile Ala Met  
2195 2200 2205

Trp Leu Leu Leu Leu Ser Ile Cys Leu Gly Ser Leu Ile Cys Val Thr  
2210 2215 2220

Ala Ala Phe Gly Val Leu Leu Ser Asn Phe Gly Ala Pro Ser Tyr Cys  
2225 2230 2235 2240

Asn Gly Val Arg Glu Leu Tyr Leu Asn Ser Ser Asn Val Thr Thr Met  
2245 2250 2255

Asp Phe Cys Glu Gly Ser Phe Pro Cys Ser Ile Cys Leu Ser Gly Leu  
2260 2265 2270

Asp Ser Leu Asp Ser Tyr Pro Ala Leu Glu Thr Ile Gln Val Thr Ile  
2275 2280 2285

Ser Ser Tyr Lys Leu Asp Leu Thr Ile Leu Gly Leu Ala Ala Glu Trp  
2290 2295 2300

Val Leu Ala Tyr Met Leu Phe Thr Lys Phe Phe Tyr Leu Leu Gly Leu  
2305 2310 2315 2320

Ser Ala Ile Met Gln Val Phe Phe Gly Tyr Phe Ala Ser His Phe Ile  
2325 2330 2335

Ser Asn Ser Trp Leu Met Trp Phe Ile Ile Ser Ile Val Gln Met Ala  
2340 2345 2350

Pro Val Ser Ala Met Val Arg Met Tyr Ile Phe Phe Ala Ser Phe Tyr  
2355 2360 2365

Tyr Ile Trp Lys Ser Tyr Val His Ile Met Asp Gly Cys Thr Ser Ser  
2370 2375 2380

SEQLIST-20480.TXT

Thr Cys Met Met Cys Tyr Lys Arg Asn Arg Ala Thr Arg Val Glu Cys  
2385 2390 2395 2400

Thr Thr Ile Val Asn Gly Met Lys Arg Ser Phe Tyr Val Tyr Ala Asn  
2405 2410 2415

Gly Gly Arg Gly Phe Cys Lys Thr His Asn Trp Asn Cys Leu Asn Cys  
2420 2425 2430

Asp Thr Phe Cys Thr Gly Ser Thr Phe Ile Ser Asp Glu Val Ala Arg  
2435 2440 2445

Asp Leu Ser Leu Gln Phe Lys Arg Pro Ile Asn Pro Thr Asp Gln Ser  
2450 2455 2460

Ser Tyr Ile Val Asp Ser Val Ala Val Lys Asn Gly Ala Leu His Leu  
2465 2470 2475 2480

Tyr Phe Asp Lys Ala Gly Gln Lys Thr Tyr Glu Arg His Pro Leu Ser  
2485 2490 2495

His Phe Val Asn Leu Asp Asn Leu Arg Ala Asn Asn Thr Lys Gly Ser  
2500 2505 2510

Leu Pro Ile Asn Val Ile Val Phe Asp Gly Lys Ser Lys Cys Asp Glu  
2515 2520 2525

Ser Ala Ser Lys Ser Ala Ser Val Tyr Tyr Ser Gln Leu Met Cys Gln  
2530 2535 2540

Pro Ile Leu Leu Leu Asp Gln Ala Leu Val Ser Asp Val Gly Asp Ser  
2545 2550 2555 2560

Thr Glu Val Ser Val Lys Met Phe Asp Ala Tyr Val Asp Thr Phe Ser  
2565 2570 2575

Ala Thr Phe Ser Val Pro Met Glu Lys Leu Lys Ala Leu Val Ala Thr  
2580 2585 2590

Ala His Ser Glu Leu Ala Lys Gly Val Ala Leu Asp Gly Val Leu Ser  
2595 2600 2605

Thr Phe Val Ser Ala Ala Arg Gln Gly Val Val Asp Thr Asp Val Asp  
2610 2615 2620

Thr Lys Asp Val Ile Glu Cys Leu Lys Leu Ser His His Ser Asp Leu  
2625 2630 2635 2640

Glu Val Thr Gly Asp Ser Cys Asn Asn Phe Met Leu Thr Tyr Asn Lys  
2645 2650 2655

Val Glu Asn Met Thr Pro Arg Asp Leu Gly Ala Cys Ile Asp Cys Asn  
2660 2665 2670

Ala Arg His Ile Asn Ala Gln Val Ala Lys Ser His Asn Val Ser Leu  
2675 2680 2685

Ile Trp Asn Val Lys Asp Tyr Met Ser Leu Ser Glu Gln Leu Arg Lys  
2690 2695 2700

Gln Ile Arg Ser Ala Ala Lys Lys Asn Asn Ile Pro Phe Arg Leu Thr  
2705 2710 2715 2720

SEQLIST-20480.TXT

Cys Ala Thr Thr Arg Gln Val Val Asn Val Ile Thr Thr Lys Ile Ser  
2725 2730 2735

Leu Lys Gly Gly Lys Ile Val Ser Thr Cys Phe Lys Leu Met Leu Lys  
2740 2745 2750

Ala Thr Leu Leu Cys Val Leu Ala Ala Leu Val Cys Tyr Ile Val Met  
2755 2760 2765

Pro Val His Thr Leu Ser Ile His Asp Gly Tyr Thr Asn Glu Ile Ile  
2770 2775 2780

Gly Tyr Lys Ala Ile Gln Asp Gly Val Thr Arg Asp Ile Ile Ser Thr  
2785 2790 2800

Asp Asp Cys Phe Ala Asn Lys His Ala Gly Phe Asp Ala Trp Phe Ser  
2805 2810 2815

Gln Arg Gly Gly Ser Tyr Lys Asn Asp Lys Ser Cys Pro Val Val Ala  
2820 2825 2830

Ala Ile Ile Thr Arg Glu Ile Gly Phe Ile Val Pro Gly Leu Pro Gly  
2835 2840 2845

Thr Val Leu Arg Ala Ile Asn Gly Asp Phe Leu His Phe Leu Pro Arg  
2850 2855 2860

Val Phe Ser Ala Val Gly Asn Ile Cys Tyr Thr Pro Ser Lys Leu Ile  
2865 2870 2875 2880

Glu Tyr Ser Asp Phe Ala Thr Ser Ala Cys Val Leu Ala Ala Glu Cys  
2885 2890 2895

Thr Ile Phe Lys Asp Ala Met Gly Lys Pro Val Pro Tyr Cys Tyr Asp  
2900 2905 2910

Thr Asn Leu Leu Glu Gly Ser Ile Ser Tyr Ser Glu Leu Arg Pro Asp  
2915 2920 2925

Thr Arg Tyr Val Leu Met Asp Gly Ser Ile Ile Gln Phe Pro Asn Thr  
2930 2935 2940

Tyr Leu Glu Gly Ser Val Arg Val Val Thr Thr Phe Asp Ala Glu Tyr  
2945 2950 2955 2960

Cys Arg His Gly Thr Cys Glu Arg Ser Glu Val Gly Ile Cys Leu Ser  
2965 2970 2975

Thr Ser Gly Arg Trp Val Leu Asn Asn Glu His Tyr Arg Ala Leu Ser  
2980 2985 2990

Gly Val Phe Cys Gly Val Asp Ala Met Asn Leu Ile Ala Asn Ile Phe  
2995 3000 3005

Thr Pro Leu Val Gln Pro Val Gly Ala Leu Asp Val Ser Ala Ser Val  
3010 3015 3020

Val Ala Gly Gly Ile Ile Ala Ile Leu Val Thr Cys Ala Ala Tyr Tyr  
3025 3030 3035 3040

Phe Met Lys Phe Arg Arg Val Phe Gly Glu Tyr Asn His Val Val Ala  
3045 3050 3055

SEQLIST-20480.TXT

Ala Asn Ala Leu Leu Phe Leu Met Ser Phe Thr Ile Leu Cys Leu Val  
3060 3065 3070

Pro Ala Tyr Ser Phe Leu Pro Gly Val Tyr Ser Val Phe Tyr Leu Tyr  
3075 3080 3085

Leu Thr Phe Tyr Phe Thr Asn Asp Val Ser Phe Leu Ala His Leu Gln  
3090 3095 3100

Trp Phe Ala Met Phe Ser Pro Ile Val Pro Phe Trp Ile Thr Ala Ile  
3105 3110 3115 3120

Tyr Val Phe Cys Ile Ser Leu Lys His Cys His Trp Phe Phe Asn Asn  
3125 3130 3135

Tyr Leu Arg Lys Arg Val Met Phe Asn Gly Val Thr Phe Ser Thr Phe  
3140 3145 3150

Glu Glu Ala Ala Leu Cys Thr Phe Leu Leu Asn Lys Glu Met Tyr Leu  
3155 3160 3165

Lys Leu Arg Ser Glu Thr Leu Leu Pro Leu Thr Gln Tyr Asn Arg Tyr  
3170 3175 3180

Leu Ala Leu Tyr Asn Lys Tyr Lys Tyr Phe Ser Gly Ala Leu Asp Thr  
3185 3190 3195 3200

Thr Ser Tyr Arg Glu Ala Ala Cys Cys His Leu Ala Lys Ala Leu Asn  
3205 3210 3215

Asp Phe Ser Asn Ser Gly Ala Asp Val Leu Tyr Gln Pro Pro Gln Thr  
3220 3225 3230

Ser Ile Thr Ser Ala Val Leu Gln Ser Gly Phe Arg Lys Met Ala Phe  
3235 3240 3245

Pro Ser Gly Lys Val Glu Gly Cys Met Val Gln Val Thr Cys Gly Thr  
3250 3255 3260

Thr Thr Leu Asn Gly Leu Trp Leu Asp Asp Thr Val Tyr Cys Pro Arg  
3265 3270 3275 3280

His Val Ile Cys Thr Ala Glu Asp Met Leu Asn Pro Asn Tyr Glu Asp  
3285 3290 3295

Leu Leu Ile Arg Lys Ser Asn His Ser Phe Leu Val Gln Ala Gly Asn  
3300 3305 3310

Val Gln Leu Arg Val Ile Gly His Ser Met Gln Asn Cys Leu Leu Arg  
3315 3320 3325

Leu Lys Val Asp Thr Ser Asn Pro Lys Thr Pro Lys Tyr Lys Phe Val  
3330 3335 3340

Arg Ile Gln Pro Gly Gln Thr Phe Ser Val Leu Ala Cys Tyr Asn Gly  
3345 3350 3355 3360

Ser Pro Ser Gly Val Tyr Gln Cys Ala Met Arg Pro Asn His Thr Ile  
3365 3370 3375

Lys Gly Ser Phe Leu Asn Gly Ser Cys Gly Ser Val Gly Phe Asn Ile  
3380 3385 3390

SEQLIST-20480.TXT

Asp Tyr Asp Cys Val Ser Phe Cys Tyr Met His His Met Glu Leu Pro  
 3395 3400 3405  
 Thr Gly Val His Ala Gly Thr Asp Leu Glu Gly Lys Phe Tyr Gly Pro  
 3410 3415 3420  
 Phe Val Asp Arg Gln Thr Ala Gln Ala Ala Gly Thr Asp Thr Thr Ile  
 3425 3430 3435 3440  
 Thr Leu Asn Val Leu Ala Trp Leu Tyr Ala Ala Val Ile Asn Gly Asp  
 3445 3450 3455  
 Arg Trp Phe Leu Asn Arg Phe Thr Thr Thr Leu Asn Asp Phe Asn Leu  
 3460 3465 3470  
 Val Ala Met Lys Tyr Asn Tyr Glu Pro Leu Thr Gln Asp His Val Asp  
 3475 3480 3485  
 Ile Leu Gly Pro Leu Ser Ala Gln Thr Gly Ile Ala Val Leu Asp Met  
 3490 3495 3500  
 Cys Ala Ala Leu Lys Glu Leu Leu Gln Asn Gly Met Asn Gly Arg Thr  
 3505 3510 3515 3520  
 Ile Leu Gly Ser Thr Ile Leu Glu Asp Glu Phe Thr Pro Phe Asp Val  
 3525 3530 3535  
 Val Arg Gln Cys Ser Gly Val Thr Phe Gln Gly Lys Phe Lys Lys Ile  
 3540 3545 3550  
 Val Lys Gly Thr His His Trp Met Leu Leu Thr Phe Leu Thr Ser Leu  
 3555 3560 3565  
 Leu Ile Leu Val Gln Ser Thr Gln Trp Ser Leu Phe Phe Phe Val Tyr  
 3570 3575 3580  
 Glu Asn Ala Phe Leu Pro Phe Thr Leu Gly Ile Met Ala Ile Ala Ala  
 3585 3590 3595 3600  
 Cys Ala Met Leu Leu Val Lys His Lys His Ala Phe Leu Cys Leu Phe  
 3605 3610 3615  
 Leu Leu Pro Ser Leu Ala Thr Val Ala Tyr Phe Asn Met Val Tyr Met  
 3620 3625 3630  
 Pro Ala Ser Trp Val Met Arg Ile Met Thr Trp Leu Glu Leu Ala Asp  
 3635 3640 3645  
 Thr Ser Leu Ser Gly Tyr Arg Leu Lys Asp Cys Val Met Tyr Ala Ser  
 3650 3655 3660  
 Ala Leu Val Leu Leu Ile Leu Met Thr Ala Arg Thr Val Tyr Asp Asp  
 3665 3670 3675 3680  
 Ala Ala Arg Arg Val Trp Thr Leu Met Asn Val Ile Thr Leu Val Tyr  
 3685 3690 3695  
 Lys Val Tyr Tyr Gly Asn Ala Leu Asp Gln Ala Ile Ser Met Trp Ala  
 3700 3705 3710  
 Leu Val Ile Ser Val Thr Ser Asn Tyr Ser Gly Val Val Thr Thr Ile  
 3715 3720 3725

SEQLIST-20480.TXT

Met Phe Leu Ala Arg Ala Ile Val Phe Val Cys Val Glu Tyr Tyr Pro  
3730 3735 3740

Leu Leu Phe Ile Thr Gly Asn Thr Leu Gln Cys Ile Met Leu Val Tyr  
3745 3750 3755 3760

Cys Phe Leu Gly Tyr Cys Cys Cys Cys Tyr Phe Gly Leu Phe Cys Leu  
3765 3770 3775

Leu Asn Arg Tyr Phe Arg Leu Thr Leu Gly Val Tyr Asp Tyr Leu Val  
3780 3785 3790

Ser Thr Gln Glu Phe Arg Tyr Met Asn Ser Gln Gly Leu Leu Pro Pro  
3795 3800 3805

Lys Ser Ser Ile Asp Ala Phe Lys Leu Asn Ile Lys Leu Leu Gly Ile  
3810 3815 3820

Gly Gly Lys Pro Cys Ile Lys Val Ala Thr Val Gln Ser Lys Met Ser  
3825 3830 3835 3840

Asp Val Lys Cys Thr Ser Val Val Leu Leu Ser Val Leu Gln Gln Leu  
3845 3850 3855

Arg Val Glu Ser Ser Ser Lys Leu Trp Ala Gln Cys Val Gln Leu His  
3860 3865 3870

Asn Asp Ile Leu Leu Ala Lys Asp Thr Thr Glu Ala Phe Glu Lys Met  
3875 3880 3885

Val Ser Leu Leu Ser Val Leu Leu Ser Met Gln Gly Ala Val Asp Ile  
3890 3895 3900

Asn Arg Leu Cys Glu Glu Met Leu Asp Asn Arg Ala Thr Leu Gln Ala  
3905 3910 3915 3920

Ile Ala Ser Glu Phe Ser Ser Leu Pro Ser Tyr Ala Ala Tyr Ala Thr  
3925 3930 3935

Ala Gln Glu Ala Tyr Glu Gln Ala Val Ala Asn Gly Asp Ser Glu Val  
3940 3945 3950

Val Leu Lys Lys Leu Lys Lys Ser Leu Asn Val Ala Lys Ser Glu Phe  
3955 3960 3965

Asp Arg Asp Ala Ala Met Gln Arg Lys Leu Glu Lys Met Ala Asp Gln  
3970 3975 3980

Ala Met Thr Gln Met Tyr Lys Gln Ala Arg Ser Glu Asp Lys Arg Ala  
3985 3990 3995 4000

Lys Val Thr Ser Ala Met Gln Thr Met Leu Phe Thr Met Leu Arg Lys  
4005 4010 4015

Leu Asp Asn Asp Ala Leu Asn Asn Ile Ile Asn Asn Ala Arg Asp Gly  
4020 4025 4030

Cys Val Pro Leu Asn Ile Ile Pro Leu Thr Thr Ala Ala Lys Leu Met  
4035 4040 4045

Val Val Val Pro Asp Tyr Gly Thr Tyr Lys Asn Thr Cys Asp Gly Asn  
4050 4055 4060

SEQLIST-20480.TXT

Thr Phe Thr Tyr Ala Ser Ala Leu Trp Glu Ile Gln Gln Val Val Asp  
4065 4070 4075 4080

Ala Asp Ser Lys Ile Val Gln Leu Ser Glu Ile Asn Met Asp Asn Ser  
4085 4090 4095

Pro Asn Leu Ala Trp Pro Leu Ile Val Thr Ala Leu Arg Ala Asn Ser  
4100 4105 4110

Ala Val Lys Leu Gln Asn Asn Glu Leu Ser Pro Val Ala Leu Arg Gln  
4115 4120 4125

Met Ser Cys Ala Ala Gly Thr Thr Gln Thr Ala Cys Thr Asp Asp Asn  
4130 4135 4140

Ala Leu Ala Tyr Tyr Asn Asn Ser Lys Gly Gly Arg Phe Val Leu Ala  
4145 4150 4155 4160

Leu Leu Ser Asp His Gln Asp Leu Lys Trp Ala Arg Phe Pro Lys Ser  
4165 4170 4175

Asp Gly Thr Gly Thr Ile Tyr Thr Glu Leu Glu Pro Pro Cys Arg Phe  
4180 4185 4190

Val Thr Asp Thr Pro Lys Gly Pro Lys Val Lys Tyr Leu Tyr Phe Ile  
4195 4200 4205

Lys Gly Leu Asn Asn Leu Asn Arg Gly Met Val Leu Gly Ser Leu Ala  
4210 4215 4220

Ala Thr Val Arg Leu Gln Ala Gly Asn Ala Thr Glu Val Pro Ala Asn  
4225 4230 4235 4240

Ser Thr Val Leu Ser Phe Cys Ala Phe Ala Val Asp Pro Ala Lys Ala  
4245 4250 4255

Tyr Lys Asp Tyr Leu Ala Ser Gly Gly Gln Pro Ile Thr Asn Cys Val  
4260 4265 4270

Lys Met Leu Cys Thr His Thr Gly Thr Gly Gln Ala Ile Thr Val Thr  
4275 4280 4285

Pro Glu Ala Asn Met Asp Gln Glu Ser Phe Gly Gly Ala Ser Cys Cys  
4290 4295 4300

Leu Tyr Cys Arg Cys His Ile Asp His Pro Asn Pro Lys Gly Phe Cys  
4305 4310 4315 4320

Asp Leu Lys Gly Lys Tyr Val Gln Ile Pro Thr Thr Cys Ala Asn Asp  
4325 4330 4335

Pro Val Gly Phe Thr Leu Arg Asn Thr Val Cys Thr Val Cys Gly Met  
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Trp Lys Gly Tyr Gly Cys Ser Cys Asp Gln Leu Arg Glu Pro Leu Met  
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Gln Ser Ala Asp Ala Ser Thr Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gly Val  
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Ser Ala Ala Arg Leu Thr Pro Cys Gly Thr Gly Thr Ser Thr Asp Val  
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Lys Phe Leu Lys Thr Asn Cys Cys Arg Phe Gln Glu Lys Asp Glu Glu  
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Gly Asn Leu Leu Asp Ser Tyr Phe Val Val Lys Arg His Thr Met Ser  
4435 4440 4445

Asn Tyr Gln His Glu Glu Thr Ile Tyr Asn Leu Val Lys Asp Cys Pro  
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Ala Val Ala Val His Asp Phe Phe Lys Phe Arg Val Asp Gly Asp Met  
4465 4470 4475 4480

Val Pro His Ile Ser Arg Gln Arg Leu Thr Lys Tyr Thr Met Ala Asp  
4485 4490 4495

Leu Val Tyr Ala Leu Arg His Phe Asp Glu Gly Asn Cys Asp Thr Leu  
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Lys Glu Ile Leu Val Thr Tyr Asn Cys Cys Asp Asp Asp Tyr Phe Asn  
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Lys Lys Asp Trp Tyr Asp Phe Val Glu Asn Pro Asp Ile Leu Arg Val  
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Tyr Ala Asn Leu Gly Glu Arg Val Arg Gln Ser Leu Leu Lys Thr Val  
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Gln Phe Cys Asp Ala Met Arg Asp Ala Gly Ile Val Gly Val Leu Thr  
4565 4570 4575

Leu Asp Asn Gln Asp Leu Asn Gly Asn Trp Tyr Asp Phe Gly Asp Phe  
4580 4585 4590

Val Gln Val Ala Pro Gly Cys Gly Val Pro Ile Val Asp Ser Tyr Tyr  
4595 4600 4605

Ser Leu Leu Met Pro Ile Leu Thr Leu Thr Arg Ala Leu Ala Ala Glu  
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Ser His Met Asp Ala Asp Leu Ala Lys Pro Leu Ile Lys Trp Asp Leu  
4625 4630 4635 4640

Leu Lys Tyr Asp Phe Thr Glu Glu Arg Leu Cys Leu Phe Asp Arg Tyr  
4645 4650 4655

Phe Lys Tyr Trp Asp Gln Thr Tyr His Pro Asn Cys Ile Asn Cys Leu  
4660 4665 4670

Asp Asp Arg Cys Ile Leu His Cys Ala Asn Phe Asn Val Leu Phe Ser  
4675 4680 4685

Thr Val Phe Pro Pro Thr Ser Phe Gly Pro Leu Val Arg Lys Ile Phe  
4690 4695 4700

Val Asp Gly Val Pro Phe Val Val Ser Thr Gly Tyr His Phe Arg Glu  
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Leu Gly Val Val His Asn Gln Asp Val Asn Leu His Ser Ser Arg Leu  
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Ser Phe Lys Glu Leu Leu Val Tyr Ala Ala Asp Pro Ala Met His Ala  
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Ala Ser Gly Asn Leu Leu Leu Asp Lys Arg Thr Thr Cys Phe Ser Val  
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Ala Ala Leu Thr Asn Asn Val Ala Phe Gln Thr Val Lys Pro Gly Asn  
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Phe Asn Lys Asp Phe Tyr Asp Phe Ala Val Ser Lys Gly Phe Phe Lys  
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Glu Gly Ser Ser Val Glu Leu Lys His Phe Phe Phe Ala Gln Asp Gly  
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Asn Ala Ala Ile Ser Asp Tyr Asp Tyr Tyr Arg Tyr Asn Leu Pro Thr  
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Met Cys Asp Ile Arg Gln Leu Leu Phe Val Val Glu Val Val Asp Lys  
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Tyr Phe Asp Cys Tyr Asp Gly Gly Cys Ile Asn Ala Asn Gln Val Ile  
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Val Asn Asn Leu Asp Lys Ser Ala Gly Phe Pro Phe Asn Lys Trp Gly  
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Lys Ala Arg Leu Tyr Tyr Asp Ser Met Ser Tyr Glu Asp Gln Asp Ala  
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Leu Phe Ala Tyr Thr Lys Arg Asn Val Ile Pro Thr Ile Thr Gln Met  
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Asn Leu Lys Tyr Ala Ile Ser Ala Lys Asn Arg Ala Arg Thr Val Ala  
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Gly Val Ser Ile Cys Ser Thr Met Thr Asn Arg Gln Phe His Gln Lys  
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Leu Leu Lys Ser Ile Ala Ala Thr Arg Gly Ala Thr Val Val Ile Gly  
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Ser Asp Val Glu Thr Pro His Leu Met Gly Trp Asp Tyr Pro Lys Cys  
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Asp Arg Ala Met Pro Asn Met Leu Arg Ile Met Ala Ser Leu Val Leu  
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Ala Arg Lys His Asn Thr Cys Cys Asn Leu Ser His Arg Phe Tyr Arg  
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Leu Ala Asn Glu Cys Ala Gln Val Leu Ser Glu Met Val Met Cys Gly  
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Gly Ser Leu Tyr Val Lys Pro Gly Gly Thr Ser Ser Gly Asp Ala Thr  
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Thr Ala Tyr Ala Asn Ser Val Phe Asn Ile Cys Gln Ala Val Thr Ala  
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Tyr Val Arg Asn Leu Gln His Arg Leu Tyr Glu Cys Leu Tyr Arg Asn  
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Arg Asp Val Asp His Glu Phe Val Asp Glu Phe Tyr Ala Tyr Leu Arg  
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Lys His Phe Ser Met Met Ile Leu Ser Asp Asp Ala Val Val Cys Tyr  
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Lys Ala Val Leu Tyr Tyr Gln Asn Asn Val Phe Met Ser Glu Ala Lys  
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Cys Trp Thr Glu Thr Asp Leu Thr Lys Gly Pro His Glu Phe Cys Ser  
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Gln His Thr Met Leu Val Lys Gln Gly Asp Asp Tyr Val Tyr Leu Pro  
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Tyr Pro Asp Pro Ser Arg Ile Leu Gly Ala Gly Cys Phe Val Asp Asp  
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Ile Val Lys Thr Asp Gly Thr Leu Met Ile Glu Arg Phe Val Ser Leu  
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Ala Ile Asp Ala Tyr Pro Leu Thr Lys His Pro Asn Gln Glu Tyr Ala  
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Asp Val Phe His Leu Tyr Leu Gln Tyr Ile Arg Lys Leu His Asp Glu  
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Leu Thr Gly His Met Leu Asp Met Tyr Ser Val Met Leu Thr Asn Asp  
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Asn Thr Ser Arg Tyr Trp Glu Pro Glu Phe Tyr Glu Ala Met Tyr Thr  
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Pro His Thr Val Leu Gln Ala Val Gly Ala Cys Val Leu Cys Asn Ser  
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Gln Thr Ser Leu Arg Cys Gly Ala Cys Ile Arg Arg Pro Phe Leu Cys  
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Cys Lys Cys Cys Tyr Asp His Val Ile Ser Thr Ser His Lys Leu Val  
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Leu Ser Val Asn Pro Tyr Val Cys Asn Ala Pro Gly Cys Asp Val Thr  
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Asp Val Thr Gln Leu Tyr Leu Gly Gly Met Ser Tyr Tyr Cys Lys Ser  
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His Lys Pro Pro Ile Ser Phe Pro Leu Cys Ala Asn Gly Gln Val Phe  
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Gly Leu Tyr Lys Asn Thr Cys Val Gly Ser Asp Asn Val Thr Asp Phe  
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Lys Ala Thr Glu Glu Thr Phe Lys Leu Ser Tyr Gly Ile Ala Thr Val  
5445 5450 5455  
Arg Glu Val Leu Ser Asp Arg Glu Leu His Leu Ser Trp Glu Val Gly  
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Lys Pro Arg Pro Pro Leu Asn Arg Asn Tyr Val Phe Thr Gly Tyr Arg  
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Val Thr Lys Asn Ser Lys Val Gln Ile Gly Glu Tyr Thr Phe Glu Lys  
5490 5495 5500  
Gly Asp Tyr Gly Asp Ala Val Val Tyr Arg Gly Thr Thr Thr Tyr Lys  
5505 5510 5515 5520  
Leu Asn Val Gly Asp Tyr Phe Val Leu Thr Ser His Thr Val Met Pro  
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Leu Ser Ala Pro Thr Leu Val Pro Gln Glu His Tyr Val Arg Ile Thr  
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Gly Leu Tyr Pro Thr Leu Asn Ile Ser Asp Glu Phe Ser Ser Asn Val  
5555 5560 5565  
Ala Asn Tyr Gln Lys Val Gly Met Gln Lys Tyr Ser Thr Leu Gln Gly  
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Pro Pro Gly Thr Gly Lys Ser His Phe Ala Ile Gly Leu Ala Leu Tyr  
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Tyr Pro Ser Ala Arg Ile Val Tyr Thr Ala Cys Ser His Ala Ala Val  
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Asp Ala Leu Cys Glu Lys Ala Leu Lys Tyr Leu Pro Ile Asp Lys Cys  
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Ser Arg Ile Ile Pro Ala Arg Ala Arg Val Glu Cys Phe Asp Lys Phe  
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Lys Val Asn Ser Thr Leu Glu Gln Tyr Val Phe Cys Thr Val Asn Ala  
5650 5655 5660  
Leu Pro Glu Thr Thr Ala Asp Ile Val Val Phe Asp Glu Ile Ser Met  
5665 5670 5675 5680  
Ala Thr Asn Tyr Asp Leu Ser Val Val Asn Ala Arg Leu Arg Ala Lys  
5685 5690 5695  
His Tyr Val Tyr Ile Gly Asp Pro Ala Gln Leu Pro Ala Pro Arg Thr  
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Leu Leu Thr Lys Gly Thr Leu Glu Pro Glu Tyr Phe Asn Ser Val Cys  
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Phe Tyr Lys Gly Val Ile Thr His Asp Val Ser Ser Ala Ile Asn Arg  
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Pro Gln Ile Gly Val Val Arg Glu Phe Leu Thr Arg Asn Pro Ala Trp  
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Arg Lys Ala Val Phe Ile Ser Pro Tyr Asn Ser Gln Asn Ala Val Ala  
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Ser Lys Ile Leu Gly Leu Pro Thr Gln Thr Val Asp Ser Ser Gln Gly  
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Ser Glu Tyr Asp Tyr Val Ile Phe Thr Gln Thr Thr Glu Thr Ala His  
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Ser Cys Asn Val Asn Arg Phe Asn Val Ala Ile Thr Arg Ala Lys Ile  
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Gly Ile Leu Cys Ile Met Ser Asp Arg Asp Leu Tyr Asp Lys Leu Gln  
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Glu Asn Val Thr Gly Leu Phe Lys Asp Cys Ser Lys Ile Ile Thr Gly  
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Leu His Pro Thr Gln Ala Pro Thr His Leu Ser Val Asp Ile Lys Phe  
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Lys Thr Glu Gly Leu Cys Val Asp Ile Pro Gly Ile Pro Lys Asp Met  
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Thr Tyr Arg Arg Leu Ile Ser Met Met Gly Phe Lys Met Asn Tyr Gln  
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Val Asn Gly Tyr Pro Asn Met Phe Ile Thr Arg Glu Glu Ala Ile Arg  
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His Val Arg Ala Trp Ile Gly Phe Asp Val Glu Gly Cys His Ala Thr  
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Arg Asp Ala Val Gly Thr Asn Leu Pro Leu Gln Leu Gly Phe Ser Thr  
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Gly Val Asn Leu Val Ala Val Pro Thr Gly Tyr Val Asp Thr Glu Asn  
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Asn Thr Glu Phe Thr Arg Val Asn Ala Lys Pro Pro Pro Gly Asp Gln  
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Phe Lys His Leu Ile Pro Leu Met Tyr Lys Gly Leu Pro Trp Asn Val  
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Val Arg Ile Lys Ile Val Gln Met Leu Ser Asp Thr Leu Lys Gly Leu  
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Ser Asp Arg Val Val Phe Val Leu Trp Ala His Gly Phe Glu Leu Thr  
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Ser Met Lys Tyr Phe Val Lys Ile Gly Pro Glu Arg Thr Cys Cys Leu  
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Cys Asp Lys Arg Ala Thr Cys Phe Ser Thr Ser Ser Asp Thr Tyr Ala  
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Cys Trp Asn His Ser Val Gly Phe Asp Tyr Val Tyr Asn Pro Phe Met  
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Ile Asp Val Gln Gln Trp Gly Phe Thr Gly Asn Leu Gln Ser Asn His  
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Asp Gln His Cys Gln Val His Gly Asn Ala His Val Ala Ser Cys Asp  
6165 6170 6175

Ala Ile Met Thr Arg Cys Leu Ala Val His Glu Cys Phe Val Lys Arg  
6180 6185 6190

Val Asp Trp Ser Val Glu Tyr Pro Ile Ile Gly Asp Glu Leu Arg Val  
6195 6200 6205

Asn Ser Ala Cys Arg Lys Val Gln His Met Val Val Lys Ser Ala Leu  
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Leu Ala Asp Lys Phe Pro Val Leu His Asp Ile Gly Asn Pro Lys Ala  
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Ile Lys Cys Val Pro Gln Ala Glu Val Glu Trp Lys Phe Tyr Asp Ala  
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Gln Pro Cys Ser Asp Lys Ala Tyr Lys Ile Glu Glu Leu Phe Tyr Ser  
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Tyr Ala Thr His His Asp Lys Phe Thr Asp Gly Val Cys Leu Phe Trp  
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Asn Cys Asn Val Asp Arg Tyr Pro Ala Asn Ala Ile Val Cys Arg Phe  
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Asp Thr Arg Val Leu Ser Asn Leu Asn Leu Pro Gly Cys Asp Gly Gly  
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Ser Leu Tyr Val Asn Lys His Ala Phe His Thr Pro Ala Phe Asp Lys  
6325 6330 6335

Ser Ala Phe Thr Asn Leu Lys Gln Leu Pro Phe Phe Tyr Tyr Ser Asp  
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Ser Pro Cys Glu Ser His Gly Lys Gln Val Val Ser Asp Ile Asp Tyr  
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Val Pro Leu Lys Ser Ala Thr Cys Ile Thr Arg Cys Asn Leu Gly Gly  
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Ala Val Cys Arg His His Ala Asn Glu Tyr Arg Gln Tyr Leu Asp Ala  
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Tyr Asn Met Met Ile Ser Ala Gly Phe Ser Leu Trp Ile Tyr Lys Gln  
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Phe Asp Thr Tyr Asn Leu Trp Asn Thr Phe Thr Arg Leu Gln Ser Leu  
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Glu Asn Val Ala Tyr Asn Val Val Asn Lys Gly His Phe Asp Gly His  
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Ala Gly Glu Ala Pro Val Ser Ile Ile Asn Asn Ala Val Tyr Thr Lys  
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Val Asp Gly Ile Asp Val Glu Ile Phe Glu Asn Lys Thr Thr Leu Pro  
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Val Asn Val Ala Phe Glu Leu Trp Ala Lys Arg Asn Ile Lys Pro Val  
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Pro Glu Ile Lys Ile Leu Asn Asn Leu Gly Val Asp Ile Ala Ala Asn  
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Thr Val Ile Trp Asp Tyr Lys Arg Glu Ala Pro Ala His Val Ser Thr  
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Ser Val Lys Gly Leu Thr Pro Ser Lys Gly Pro Ala Gln Ala Ser Val  
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Asn Gly Val Thr Leu Ile Gly Glu Ser Val Lys Thr Gln Phe Asn Tyr  
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Phe Lys Lys Val Asp Gly Ile Ile Gln Gln Leu Pro Glu Thr Tyr Phe  
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Thr Asp Phe Leu Glu Leu Ala Met Asp Glu Phe Ile Gln Arg Tyr Lys  
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Leu Glu Gly Tyr Ala Phe Glu His Ile Val Tyr Gly Asp Phe Ser His  
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Gly Gln Leu Gly Gly Leu His Leu Met Ile Gly Leu Ala Lys Arg Ser  
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Gln Asp Ser Pro Leu Lys Leu Glu Asp Phe Ile Pro Met Asp Ser Thr  
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Val Lys Asn Tyr Phe Ile Thr Asp Ala Gln Thr Gly Ser Ser Lys Cys  
6705 6710 6715 6720

Val Cys Ser Val Ile Asp Leu Leu Leu Asp Asp Phe Val Glu Ile Ile  
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Lys Ser Gln Asp Leu Ser Val Ile Ser Lys Val Val Lys Val Thr Ile  
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Asp Tyr Ala Glu Ile Ser Phe Met Leu Trp Cys Lys Asp Gly His Val  
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Glu Thr Phe Tyr Pro Lys Leu Gln Ala Ser Arg Ala Trp Gln Pro Gly  
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Val Ala Met Pro Asn Leu Tyr Lys Met Gln Arg Met Leu Leu Glu Lys  
6785 6790 6795 6800

Cys Asp Leu Gln Asn Tyr Gly Glu Asn Ala Val Ile Pro Lys Gly Ile  
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Met Met Asn Val Ala Lys Tyr Thr Gln Leu Cys Gln Tyr Leu Asn Thr  
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Leu Thr Leu Ala Val Pro Tyr Asn Met Arg Val Ile His Phe Gly Ala  
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Gly Ser Asp Lys Gly Val Ala Pro Gly Thr Ala Val Leu Arg Gln Trp  
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Leu Pro Thr Gly Thr Leu Leu Val Asp Ser Asp Leu Asn Asp Phe Val  
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Ser Asp Ala Tyr Ser Thr Leu Ile Gly Asp Cys Ala Thr Val His Thr  
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Ala Asn Lys Trp Asp Leu Ile Ile Ser Asp Met Tyr Asp Pro Arg Thr  
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Lys His Val Thr Lys Glu Asn Asp Ser Lys Glu Gly Phe Phe Thr Tyr  
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Leu Cys Gly Phe Ile Lys Gln Lys Leu Ala Leu Gly Gly Ser Ile Ala  
6930 6935 6940

Val Lys Ile Thr Glu His Ser Trp Asn Ala Asp Leu Tyr Lys Leu Met  
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Gly His Phe Ser Trp Trp Thr Ala Phe Val Thr Asn Val Asn Ala Ser  
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Ser Ser Glu Ala Phe Leu Ile Gly Ala Asn Tyr Leu Gly Lys Pro Lys  
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Asn Thr Asn Pro Ile Gln Leu Ser Ser Tyr Ser Leu Phe Asp Met Ser  
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Lys Phe Pro Leu Lys Leu Arg Gly Thr Ala Val Met Ser Leu Lys Glu  
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Asn Gln Ile Asn Asp Met Ile Tyr Ser Leu Leu Glu Lys Gly Arg Leu  
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Asn Asn



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 Asp Ser Val Glu Glu Ala Leu Ser Glu Ala Arg Glu His Leu Lys Asn  
 35 40 45  
 Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val Leu Pro Gln Leu  
 50 55 60  
 Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala Leu Ser Thr Asn  
 65 70 75 80  
 His Gly His Lys Val Val Glu Leu Val Ala Glu Met Asp Gly Ile Gln  
 85 90 95  
 Tyr Gly Arg Ser Gly Ile Thr Leu Gly Val Leu Val Pro His Val Gly  
 100 105 110  
 Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg Lys Asn Gly Asn  
 115 120 125  
 Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu Lys Ser Tyr Asp  
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 145 150 155 160  
 Trp Asn Thr Lys His Gly Ser Gly Ala Leu Arg Glu Leu Thr Arg Glu  
 165 170 175  
 Leu Asn Gly Gly Ala Val Thr Arg Tyr Val Asp Asn Asn Phe Cys Gly  
 180 185 190  
 Pro Asp Gly Tyr Pro Leu Asp Cys Ile Lys Asp Phe Leu Ala Arg Ala  
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 Gly Lys Ser Met Cys Thr Leu Ser Glu Gln Leu Asp Tyr Ile Glu Ser  
 210 215 220  
 Lys Arg Gly Val Tyr Cys Cys Arg Asp His Glu His Glu Ile Ala Trp  
 225 230 235 240  
 Phe Thr Glu Arg Ser Asp Lys Ser Tyr Glu His Gln Thr Pro Phe Glu  
 245 250 255  
 Ile Lys Ser Ala Lys Lys Phe Asp Thr Phe Lys Gly Glu Cys Pro Lys  
 260 265 270  
 Phe Val Phe Pro Leu Asn Ser Lys Val Lys Val Ile Gln Pro Arg Val

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Pro Val Ala Ser Pro Gln Glu Cys Asn Asn Met His Leu Ser Thr Leu
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Met Lys Cys Asn His Cys Asp Glu Val Ser Trp Gln Thr Cys Asp Phe
   325   330   335
Leu Lys Ala Thr Cys Glu His Cys Gly Thr Glu Asn Leu Val Ile Glu
   340   345   350
Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met
   355   360   365
Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val
   370   375   380
Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly
  385   390   395   400
Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys
   405   410   415
Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly
   420   425   430
Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu
   435   440   445
Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val
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Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe
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Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr
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Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr
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Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser
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Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala Ala Gly Val Ile
   530   535   540
Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pro
  545   550   555   560
Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln
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Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser Asp Leu Leu Thr
   580   585   590
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   595   600   605
Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr Val Glu Lys Leu

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|         |         | Trp 630 | Ile     | Glu     |
|         |         |         | Ala     | Lys     |
|         |         |         | Leu 635 | Ser     |
|         |         |         | Ala     | Gly     |
|         |         |         | Val     | Glu 640 |
| Phe     | Leu     | Lys     | Asp     | Ala 645 |
|         |         | Trp     | Glu     | Ile     |
|         |         |         | Leu     | Lys 650 |
|         |         |         | Phe     | Leu     |
|         |         |         | Ile     | Thr     |
|         |         |         |         | Gly 655 |
| Phe     | Asp     | Ile     | Val 660 | Lys     |
|         |         | Gly     | Gln     | Ile     |
|         |         |         | Gln 665 | Val     |
|         |         |         | Ala     | Ser     |
|         |         |         | Asp     | Asn 670 |
|         |         |         | Ile     | Lys     |
| Asp     | Cys     | Val 675 | Lys     | Cys     |
|         |         |         | Phe     | Ile     |
|         |         |         | Asp 680 | Val     |
|         |         |         | Val     | Asn     |
|         |         |         | Lys     | Ala 685 |
|         |         |         | Leu     | Glu     |
|         |         |         | Met     |         |
| Cys     | Ile 690 | Asp     | Gln     | Val     |
|         |         | Thr     | Ile 695 | Ala     |
|         |         |         | Gly     | Ala     |
|         |         |         | Lys     | Leu 700 |
|         |         |         | Arg     | Ser     |
|         |         |         | Leu     | Asn     |
| Leu 705 | Gly     | Glu     | Val     | Phe     |
|         |         |         | Ile 710 | Ala     |
|         |         |         | Gln     | Ser     |
|         |         |         | Lys     | Gly 715 |
|         |         |         | Leu     | Tyr     |
|         |         |         | Arg     | Gln     |
|         |         |         |         | Cys 720 |
| Ile     | Arg     | Gly     | Lys     | Glu 725 |
|         |         |         | Gln     | Leu     |
|         |         |         | Gln     | Leu     |
|         |         |         | Leu 730 | Met     |
|         |         |         | Pro     | Leu     |
|         |         |         | Lys     | Ala 735 |
|         |         |         |         | Pro     |
| Lys     | Glu     | Val     | Thr 740 | Phe     |
|         |         |         | Leu     | Glu     |
|         |         |         | Gly     | Asp 745 |
|         |         |         | Ser     | His     |
|         |         |         | Asp     | Thr     |
|         |         |         | Val 750 | Leu     |
|         |         |         |         | Thr     |
| Ser     | Glu     | Glu 755 | Val     | Val     |
|         |         |         | Leu     | Lys     |
|         |         |         | Asn 760 | Gly     |
|         |         |         | Glu     | Leu     |
|         |         |         | Glu     | Ala 765 |
|         |         |         | Leu     | Glu     |
|         |         |         |         | Thr     |
| Pro     | Val 770 | Asp     | Ser     | Phe     |
|         |         |         | Thr     | Asn 775 |
|         |         |         | Gly     | Ala     |
|         |         |         | Ile     | Val     |
|         |         |         | Gly 780 | Thr     |
|         |         |         | Pro     | Val     |
|         |         |         | Cys     |         |
| Val 785 | Asn     | Gly     | Leu     | Met     |
|         |         |         | Leu 790 | Leu     |
|         |         |         | Glu     | Ile     |
|         |         |         | Lys     | Asp 795 |
|         |         |         | Lys     | Glu     |
|         |         |         | Gln     | Tyr     |
|         |         |         |         | Cys 800 |
| Ala     | Leu     | Ser     | Pro     | Gly 805 |
|         |         |         | Leu     | Leu     |
|         |         |         | Ala     | Thr     |
|         |         |         | Asn 810 | Asn     |
|         |         |         | Val     | Phe     |
|         |         |         | Arg     | Leu 815 |
|         |         |         |         | Lys     |
| Gly     | Gly     | Ala     | Pro 820 | Ile     |
|         |         |         | Lys     | Gly     |
|         |         |         | Val     | Thr 825 |
|         |         |         | Phe     | Gly     |
|         |         |         | Glu     | Asp     |
|         |         |         | Thr 830 | Val     |
|         |         |         |         | Trp     |
| Glu     | Val     | Gln     | Gly     | Tyr     |
|         |         |         | Lys     | Asn     |
|         |         |         | Val 840 | Arg     |
|         |         |         | Ile     | Thr     |
|         |         |         | Phe     | Glu 845 |
|         |         |         | Leu     | Asp     |
|         |         |         | Glu     |         |
| Arg     | Val 850 | Asp     | Lys     | Val     |
|         |         |         | Leu     | Asn 855 |
|         |         |         | Glu     | Lys     |
|         |         |         | Cys     | Ser     |
|         |         |         | Val 860 | Tyr     |
|         |         |         | Thr     | Val     |
|         |         |         | Glu     |         |
| Ser     | Gly     | Thr     | Glu     | Val     |
|         |         |         | Thr 870 | Glu     |
|         |         |         | Phe     | Ala     |
|         |         |         | Cys     | Val 875 |
|         |         |         | Val     | Ala     |
|         |         |         | Glu     | Ala     |
|         |         |         |         | Val 880 |
| Val     | Lys     | Thr     | Leu     | Gln 885 |
|         |         |         | Pro     | Val     |
|         |         |         | Ser     | Asp     |
|         |         |         | Leu 890 | Leu     |
|         |         |         | Thr     | Asn     |
|         |         |         | Met     | Gly 895 |
|         |         |         | Ile     |         |
| Asp     | Leu     | Asp     | Glu 900 | Trp     |
|         |         |         | Ser     | Val     |
|         |         |         | Ala     | Thr 905 |
|         |         |         | Phe     | Tyr     |
|         |         |         | Leu     | Phe     |
|         |         |         | Asp     | Asp 910 |
|         |         |         | Ala     |         |
| Gly     | Glu     | Glu 915 | Asn     | Phe     |
|         |         |         | Ser     | Ser     |
|         |         |         | Arg 920 | Met     |
|         |         |         | Tyr     | Cys     |
|         |         |         | Ser     | Phe 925 |
|         |         |         | Tyr     | Pro     |
|         |         |         | Pro     |         |
| Asp     | Glu     | Glu     | Glu     | Asp     |
|         |         |         | Asp 935 | Ala     |
|         |         |         | Glu     | Cys     |
|         |         |         | Glu     | Glu 940 |
|         |         |         | Glu     | Glu     |
|         |         |         | Ile     | Asp     |
| Glu     | Thr     | Cys     | Glu     | His     |
|         |         |         | Glu     | Tyr     |
|         |         |         | Gly     | Thr     |
|         |         |         | Glu     | Asp     |
|         |         |         | Asp     | Tyr     |
|         |         |         | Gln     | Gly     |
|         |         |         | Leu     |         |

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945                      950                      955                      960  
 Pro Leu Glu Phe Gly Ala Ser Ala Glu Thr Val Arg Val Glu Glu Glu  
                                  965                                   970                                   975  
 Glu Glu Glu Asp Trp Leu Asp Asp Thr Thr Glu Gln Ser Glu Ile Glu  
                                  980                                   985                                   990  
 Pro Glu Pro Glu Pro Thr Pro Glu Glu Pro Val Asn Gln Phe Thr Gly  
                                  995                                   1000                                   1005  
 Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Ile Val  
                                  1010                                   1015                                   1020  
 Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala Ala Asn  
                                  1025                                   1030                                   1035                                   1040  
 Ile His Leu Lys His Gly Gly Gly Val Ala Gly Ala Leu Asn Lys Ala  
                                  1045                                   1050                                   1055  
 Thr Asn Gly Ala Met Gln Lys Glu Ser Asp Asp Tyr Ile Lys Leu Asn  
                                  1060                                   1065                                   1070  
 Gly Pro Leu Thr Val Gly Gly Ser Cys Leu Leu Ser Gly His Asn Leu  
                                  1075                                   1080                                   1085  
 Ala Lys Lys Cys Leu His Val Val Gly Pro Asn Leu Asn Ala Gly Glu  
                                  1090                                   1095                                   1100  
 Asp Ile Gln Leu Leu Lys Ala Ala Tyr Glu Asn Phe Asn Ser Gln Asp  
                                  1105                                   1110                                   1115                                   1120  
 Ile Leu Leu Ala Pro Leu Leu Ser Ala Gly Ile Phe Gly Ala Lys Pro  
                                  1125                                   1130                                   1135  
 Leu Gln Ser Leu Gln Val Cys Val Gln Thr Val Arg Thr Gln Val Tyr  
                                  1140                                   1145                                   1150  
 Ile Ala Val Asn Asp Lys Ala Leu Tyr Glu Gln Val Val Met Asp Tyr  
                                  1155                                   1160                                   1165  
 Leu Asp Asn Leu Lys Pro Arg Val Glu Ala Pro Lys Gln Glu Glu Pro  
                                  1170                                   1175                                   1180  
 Pro Asn Thr Glu Asp Ser Lys Thr Glu Glu Lys Ser Val Val Gln Lys  
                                  1185                                   1190                                   1195                                   1200  
 Pro Val Asp Val Lys Pro Lys Ile Lys Ala Cys Ile Asp Glu Val Thr  
                                  1205                                   1210                                   1215  
 Thr Thr Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys Leu Leu Leu Phe  
                                  1220                                   1225                                   1230  
 Ala Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln Asn Met Leu Arg  
                                  1235                                   1240                                   1245  
 Gly Glu Asp Met Ser Phe Leu Glu Lys Asp Ala Pro Tyr Met Val Gly  
                                  1250                                   1255                                   1260  
 Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val Ile Pro Ser Lys  
                                  1265                                   1270                                   1275                                   1280  
 Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala Leu Lys Lys Val

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| 1285 |     |      |      |      |      |      |      |      |      | 1290 |      |      |      |     |     |  |  |  |  | 1295 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|------|-----|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|--|--|--|--|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Pro  | Val | Asp  | Glu  | Tyr  | Ile  | Thr  | Thr  | Tyr  | Pro  | Gly  | Gln  | Gly  | Cys  | Ala | Gly |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|      |     |      | 1300 |      |      |      |      | 1305 |      |      |      |      | 1310 |     |     |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Tyr  | Thr | Leu  | Glu  | Glu  | Ala  | Lys  | Thr  | Ala  | Leu  | Lys  | Lys  | Cys  | Lys  | Ser | Ala |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|      |     | 1315 |      |      |      |      | 1320 |      |      |      |      | 1325 |      |     |     |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Phe  | Tyr | Val  | Leu  | Pro  | Ser  | Glu  | Ala  | Pro  | Asn  | Ala  | Lys  | Glu  | Glu  | Ile | Leu |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|      |     | 1330 |      |      |      | 1335 |      |      |      |      | 1340 |      |      |     |     |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Gly  | Thr | Val  | Ser  | Trp  | Asn  | Leu  | Arg  | Glu  | Met  | Leu  | Ala  | His  | Ala  | Glu | Glu |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|      |     | 1345 |      |      | 1350 |      |      |      |      | 1355 |      |      |      |     |     |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Thr  | Arg | Lys  | Leu  | Met  | Pro  | Ile  | Cys  | Met  | Asp  | Val  | Arg  | Ala  | Ile  | Met | Ala |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|      |     |      |      | 1365 |      |      |      |      | 1370 |      |      |      |      |     |     |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Thr  | Ile | Gln  | Arg  | Lys  | Tyr  | Lys  | Gly  | Ile  | Lys  | Ile  | Gln  | Glu  | Gly  | Ile | Val |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|      |     |      | 1380 |      |      |      |      | 1385 |      |      |      |      |      |     |     |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Asp  | Tyr | Gly  | Val  | Arg  | Phe  | Phe  | Phe  | Tyr  | Thr  | Ser  | Lys  | Glu  | Pro  | Val | Ala |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|      |     | 1395 |      |      |      |      |      | 1400 |      |      |      |      |      |     |     |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Ser  | Ile | Ile  | Thr  | Lys  | Leu  | Asn  | Ser  | Leu  | Asn  | Glu  | Pro  | Leu  | Val  | Thr | Met |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|      |     | 1410 |      |      |      | 1415 |      |      |      |      |      |      |      |     |     |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Pro  | Ile | Gly  | Tyr  | Val  | Thr  | His  | Gly  | Phe  | Asn  | Leu  | Glu  | Glu  | Ala  | Ala | Arg |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|      |     | 1425 |      |      | 1430 |      |      |      |      | 1435 |      |      |      |     |     |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Cys  | Met | Arg  | Ser  | Leu  | Lys  | Ala  | Pro  | Ala  | Val  | Val  | Ser  | Val  | Ser  | Ser | Pro |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|      |     |      |      | 1445 |      |      |      |      | 1450 |      |      |      |      |     |     |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Asp  | Ala | Val  | Thr  | Thr  | Tyr  | Asn  | Gly  | Tyr  | Leu  | Thr  | Ser  | Ser  | Ser  | Lys | Thr |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|      |     |      |      | 1460 |      |      |      | 1465 |      |      |      |      |      |     |     |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Ser  | Glu | Glu  | His  | Phe  | Val  | Glu  | Thr  | Val  | Ser  | Leu  | Ala  | Gly  | Ser  | Tyr | Arg |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|      |     | 1475 |      |      |      | 1480 |      |      |      |      |      |      |      |     |     |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Asp  | Trp | Ser  | Tyr  | Ser  | Gly  | Gln  | Arg  | Thr  | Glu  | Leu  | Gly  | Val  | Glu  | Phe | Leu |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|      |     | 1490 |      |      | 1495 |      |      |      |      |      |      |      |      |     |     |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Lys  | Arg | Gly  | Asp  | Lys  | Ile  | Val  | Tyr  | His  | Thr  | Leu  | Glu  | Ser  | Pro  | Val | Glu |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|      |     | 1505 |      |      | 1510 |      |      |      |      | 1515 |      |      |      |     |     |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Phe  | His | Leu  | Asp  | Gly  | Glu  | Val  | Leu  | Ser  | Leu  | Asp  | Lys  | Leu  | Lys  | Ser | Leu |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|      |     |      |      | 1525 |      |      |      |      | 1530 |      |      |      |      |     |     |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Leu  | Ser | Leu  | Arg  | Glu  | Val  | Lys  | Thr  | Ile  | Lys  | Val  | Phe  | Thr  | Thr  | Val | Asp |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|      |     |      | 1540 |      |      |      |      | 1545 |      |      |      |      |      |     |     |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Asn  | Thr | Asn  | Leu  | His  | Thr  | Gln  | Leu  | Val  | Asp  | Met  | Ser  | Met  | Thr  | Tyr | Gly |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|      |     | 1555 |      |      |      | 1560 |      |      |      |      |      |      |      |     |     |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Gln  | Gln | Phe  | Gly  | Pro  | Thr  | Tyr  | Leu  | Asp  | Gly  | Ala  | Asp  | Val  | Thr  | Lys | Ile |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|      |     | 1570 |      |      |      | 1575 |      |      |      |      |      |      |      |     |     |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Lys  | Pro | His  | Val  | Asn  | His  | Glu  | Gly  | Lys  | Thr  | Phe  | Phe  | Val  | Leu  | Pro | Ser |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|      |     | 1585 |      |      | 1590 |      |      |      |      | 1595 |      |      |      |     |     |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Asp  | Asp | Thr  | Leu  | Arg  | Ser  | Glu  | Ala  | Phe  | Glu  | Tyr  | Tyr  | His  | Thr  | Leu | Asp |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|      |     |      |      | 1605 |      |      |      |      | 1610 |      |      |      |      |     |     |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Glu  | Ser | Phe  | Leu  | Gly  | Arg  | Tyr  | Met  | Ser  | Ala  | Leu  | Asn  | His  | Thr  | Lys | Lys |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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|   |      |      |
|---|------|------|
| 1620  | 1625 | 1630 |
| Trp Lys Phe Pro Gln Val Gly Gly Leu Thr Ser Ile Lys Trp Ala Asp |      |      |
| 1635  | 1640 | 1645 |
| Asn Asn Cys Tyr Leu Ser Ser Val Leu Leu Ala Leu Gln Gln Leu Glu |      |      |
| 1650  | 1655 | 1660 |
| Val Lys Phe Asn Ala Pro Ala Leu Gln Glu Ala Tyr Tyr Arg Ala Arg |      |      |
| 1665  | 1670 | 1675 |
| Ala Gly Asp Ala Ala Asn Phe Cys Ala Leu Ile Leu Ala Tyr Ser Asn |      |      |
| 1685  | 1690 | 1695 |
| Lys Thr Val Gly Glu Leu Gly Asp Val Arg Glu Thr Met Thr His Leu |      |      |
| 1700  | 1705 | 1710 |
| Leu Gln His Ala Asn Leu Glu Ser Ala Lys Arg Val Leu Asn Val Val |      |      |
| 1715  | 1720 | 1725 |
| Cys Lys His Cys Gly Gln Lys Thr Thr Thr Leu Thr Gly Val Glu Ala |      |      |
| 1730  | 1735 | 1740 |
| Val Met Tyr Met Gly Thr Leu Ser Tyr Asp Asn Leu Lys Thr Gly Val |      |      |
| 1745  | 1750 | 1755 |
| Ser Ile Pro Cys Val Cys Gly Arg Asp Ala Thr Gln Tyr Leu Val Gln |      |      |
| 1765  | 1770 | 1775 |
| Gln Glu Ser Ser Phe Val Met Met Ser Ala Pro Pro Ala Glu Tyr Lys |      |      |
| 1780  | 1785 | 1790 |
| Leu Gln Gln Gly Thr Phe Leu Cys Ala Asn Glu Tyr Thr Gly Asn Tyr |      |      |
| 1795  | 1800 | 1805 |
| Gln Cys Gly His Tyr Thr His Ile Thr Ala Lys Glu Thr Leu Tyr Arg |      |      |
| 1810  | 1815 | 1820 |
| Ile Asp Gly Ala His Leu Thr Lys Met Ser Glu Tyr Lys Gly Pro Val |      |      |
| 1825  | 1830 | 1835 |
| Thr Asp Val Phe Tyr Lys Glu Thr Ser Tyr Thr Thr Thr Ile Lys Pro |      |      |
| 1845  | 1850 | 1855 |
| Val Ser Tyr Lys Leu Asp Gly Val Thr Tyr Thr Glu Ile Glu Pro Lys |      |      |
| 1860  | 1865 | 1870 |
| Leu Asp Gly Tyr Tyr Lys Lys Asp Asn Ala Tyr Tyr Thr Glu Gln Pro |      |      |
| 1875  | 1880 | 1885 |
| Ile Asp Leu Val Pro Thr Gln Pro Leu Pro Asn Ala Ser Phe Asp Asn |      |      |
| 1890  | 1895 | 1900 |
| Phe Lys Leu Thr Cys Ser Asn Thr Lys Phe Ala Asp Asp Leu Asn Gln |      |      |
| 1905  | 1910 | 1915 |
| Met Thr Gly Phe Thr Lys Pro Ala Ser Arg Glu Leu Ser Val Thr Phe |      |      |
| 1925  | 1930 | 1935 |
| Phe Pro Asp Leu Asn Gly Asp Val Val Ala Ile Asp Tyr Arg His Tyr |      |      |
| 1940  | 1945 | 1950 |
| Ser Ala Ser Phe Lys Lys Gly Ala Lys Leu Leu His Lys Pro Ile Val |      |      |

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| 1955   | 1960 | 1965 |
|--|------|------|
| Trp His Ile Asn Gln Ala Thr Thr Lys Thr Thr Phe Lys Pro Asn Thr<br>1970 1975 1980      |      |      |
| Trp Cys Leu Arg Cys Leu Trp Ser Thr Lys Pro Val Asp Thr Ser Asn<br>1985 1990 1995 2000 |      |      |
| Ser Phe Glu Val Leu Ala Val Glu Asp Thr Gln Gly Met Asp Asn Leu<br>2005 2010 2015      |      |      |
| Ala Cys Glu Ser Gln Gln Pro Thr Ser Glu Glu Val Val Glu Asn Pro<br>2020 2025 2030      |      |      |
| Thr Ile Gln Lys Glu Val Ile Glu Cys Asp Val Lys Thr Thr Glu Val<br>2035 2040 2045      |      |      |
| Val Gly Asn Val Ile Leu Lys Pro Ser Asp Glu Gly Val Lys Val Thr<br>2050 2055 2060      |      |      |
| Gln Glu Leu Gly His Glu Asp Leu Met Ala Ala Tyr Val Glu Asn Thr<br>2065 2070 2075 2080 |      |      |
| Ser Ile Thr Ile Lys Lys Pro Asn Glu Leu Ser Leu Ala Leu Gly Leu<br>2085 2090 2095      |      |      |
| Lys Thr Ile Ala Thr His Gly Ile Ala Ala Ile Asn Ser Val Pro Trp<br>2100 2105 2110      |      |      |
| Ser Lys Ile Leu Ala Tyr Val Lys Pro Phe Leu Gly Gln Ala Ala Ile<br>2115 2120 2125      |      |      |
| Thr Thr Ser Asn Cys Ala Lys Arg Leu Ala Gln Arg Val Phe Asn Asn<br>2130 2135 2140      |      |      |
| Tyr Met Pro Tyr Val Phe Thr Leu Leu Phe Gln Leu Cys Thr Phe Thr<br>2145 2150 2155 2160 |      |      |
| Lys Ser Thr Asn Ser Arg Ile Arg Ala Ser Leu Pro Thr Thr Ile Ala<br>2165 2170 2175      |      |      |
| Lys Asn Ser Val Lys Ser Val Ala Lys Leu Cys Leu Asp Ala Gly Ile<br>2180 2185 2190      |      |      |
| Asn Tyr Val Lys Ser Pro Lys Phe Ser Lys Leu Phe Thr Ile Ala Met<br>2195 2200 2205      |      |      |
| Trp Leu Leu Leu Ser Ile Cys Leu Gly Ser Leu Ile Cys Val Thr<br>2210 2215 2220          |      |      |
| Ala Ala Phe Gly Val Leu Leu Ser Asn Phe Gly Ala Pro Ser Tyr Cys<br>2225 2230 2235 2240 |      |      |
| Asn Gly Val Arg Glu Leu Tyr Leu Asn Ser Ser Asn Val Thr Thr Met<br>2245 2250 2255      |      |      |
| Asp Phe Cys Glu Gly Ser Phe Pro Cys Ser Ile Cys Leu Ser Gly Leu<br>2260 2265 2270      |      |      |
| Asp Ser Leu Asp Ser Tyr Pro Ala Leu Glu Thr Ile Gln Val Thr Ile<br>2275 2280 2285      |      |      |
| Ser Ser Tyr Lys Leu Asp Leu Thr Ile Leu Gly Leu Ala Ala Glu Trp                        |      |      |

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2290 2295 2300  
 Val Leu Ala Tyr Met Leu Phe Thr Lys Phe Phe Tyr Leu Leu Gly Leu  
 2305 2310 2315 2320  
 Ser Ala Ile Met Gln Val Phe Phe Gly Tyr Phe Ala Ser His Phe Ile  
 2325 2330 2335  
 Ser Asn Ser Trp Leu Met Trp Phe Ile Ile Ser Ile Val Gln Met Ala  
 2340 2345 2350  
 Pro Val Ser Ala Met Val Arg Met Tyr Ile Phe Phe Ala Ser Phe Tyr  
 2355 2360 2365  
 Tyr Ile Trp Lys Ser Tyr Val His Ile Met Asp Gly Cys Thr Ser Ser  
 2370 2375 2380  
 Thr Cys Met Met Cys Tyr Lys Arg Asn Arg Ala Thr Arg Val Glu Cys  
 2385 2390 2395 2400  
 Thr Thr Ile Val Asn Gly Met Lys Arg Ser Phe Tyr Val Tyr Ala Asn  
 2405 2410 2415  
 Gly Gly Arg Gly Phe Cys Lys Thr His Asn Trp Asn Cys Leu Asn Cys  
 2420 2425 2430  
 Asp Thr Phe Cys Thr Gly Ser Thr Phe Ile Ser Asp Glu Val Ala Arg  
 2435 2440 2445  
 Asp Leu Ser Leu Gln Phe Lys Arg Pro Ile Asn Pro Thr Asp Gln Ser  
 2450 2455 2460  
 Ser Tyr Ile Val Asp Ser Val Ala Val Lys Asn Gly Ala Leu His Leu  
 2465 2470 2475 2480  
 Tyr Phe Asp Lys Ala Gly Gln Lys Thr Tyr Glu Arg His Pro Leu Ser  
 2485 2490 2495  
 His Phe Val Asn Leu Asp Asn Leu Arg Ala Asn Asn Thr Lys Gly Ser  
 2500 2505 2510  
 Leu Pro Ile Asn Val Ile Val Phe Asp Gly Lys Ser Lys Cys Asp Glu  
 2515 2520 2525  
 Ser Ala Ser Lys Ser Ala Ser Val Tyr Tyr Ser Gln Leu Met Cys Gln  
 2530 2535 2540  
 Pro Ile Leu Leu Leu Asp Gln Ala Leu Val Ser Asp Val Gly Asp Ser  
 2545 2550 2555 2560  
 Thr Glu Val Ser Val Lys Met Phe Asp Ala Tyr Val Asp Thr Phe Ser  
 2565 2570 2575  
 Ala Thr Phe Ser Val Pro Met Glu Lys Leu Lys Ala Leu Val Ala Thr  
 2580 2585 2590  
 Ala His Ser Glu Leu Ala Lys Gly Val Ala Leu Asp Gly Val Leu Ser  
 2595 2600 2605  
 Thr Phe Val Ser Ala Ala Arg Gln Gly Val Val Asp Thr Asp Val Asp  
 2610 2615 2620  
 Thr Lys Asp Val Ile Glu Cys Leu Lys Leu Ser His His Ser Asp Leu



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|   |   |      |  |      |  |      |
|---|---|------|--|------|--|------|
| 2625  |   | 2630 |  | 2635 |  | 2640 |
| Glu Val Thr Gly   | Asp Ser Cys Asn Asn Phe Met Leu Thr Tyr Asn Lys |      |  |      |  |      |
|   | 2645  |      |  | 2650 |  | 2655 |
| Val Glu Asn Met Thr Pro Arg Asp                                 | Leu Gly Ala Cys Ile Asp Cys Asn                 |      |  |      |  |      |
|   | 2660  |      |  | 2665 |  | 2670 |
| Ala Arg His Ile Asn Ala Gln Val Ala Lys Ser His Asn Val Ser Leu |   |      |  |      |  |      |
|   | 2675  |      |  | 2680 |  | 2685 |
| Ile Trp Asn Val Lys Asp Tyr Met Ser Leu Ser Glu Gln Leu Arg Lys |   |      |  |      |  |      |
|   | 2690  |      |  | 2695 |  | 2700 |
| Gln Ile Arg Ser Ala Ala Lys Lys Asn Asn Ile Pro Phe Arg Leu Thr |   |      |  |      |  |      |
|   | 2705  |      |  | 2710 |  | 2715 |
| Cys Ala Thr Thr Arg Gln Val Val Asn Val Ile Thr Thr Lys Ile Ser |   |      |  |      |  |      |
|   | 2725  |      |  | 2730 |  | 2735 |
| Leu Lys Gly Gly Lys Ile Val Ser Thr Cys Phe Lys Leu Met Leu Lys |   |      |  |      |  |      |
|   | 2740  |      |  | 2745 |  | 2750 |
| Ala Thr Leu Leu Cys Val Leu Ala Ala Leu Val Cys Tyr Ile Val Met |   |      |  |      |  |      |
|   | 2755  |      |  | 2760 |  | 2765 |
| Pro Val His Thr Leu Ser Ile His Asp Gly Tyr Thr Asn Glu Ile Ile |   |      |  |      |  |      |
|   | 2770  |      |  | 2775 |  | 2780 |
| Gly Tyr Lys Ala Ile Gln Asp Gly Val Thr Arg Asp Ile Ile Ser Thr |   |      |  |      |  |      |
|   | 2785  |      |  | 2790 |  | 2795 |
| Asp Asp Cys Phe Ala Asn Lys His Ala Gly Phe Asp Ala Trp Phe Ser |   |      |  |      |  |      |
|   | 2805  |      |  | 2810 |  | 2815 |
| Gln Arg Gly Gly Ser Tyr Lys Asn Asp Lys Ser Cys Pro Val Val Ala |   |      |  |      |  |      |
|   | 2820  |      |  | 2825 |  | 2830 |
| Ala Ile Ile Thr Arg Glu Ile Gly Phe Ile Val Pro Gly Leu Pro Gly |   |      |  |      |  |      |
|   | 2835  |      |  | 2840 |  | 2845 |
| Thr Val Leu Arg Ala Ile Asn Gly Asp Phe Leu His Phe Leu Pro Arg |   |      |  |      |  |      |
|   | 2850  |      |  | 2855 |  | 2860 |
| Val Phe Ser Ala Val Gly Asn Ile Cys Tyr Thr Pro Ser Lys Leu Ile |   |      |  |      |  |      |
|   | 2865  |      |  | 2870 |  | 2875 |
| Glu Tyr Ser Asp Phe Ala Thr Ser Ala Cys Val Leu Ala Ala Glu Cys |   |      |  |      |  |      |
|   | 2885  |      |  | 2890 |  | 2895 |
| Thr Ile Phe Lys Asp Ala Met Gly Lys Pro Val Pro Tyr Cys Tyr Asp |   |      |  |      |  |      |
|   | 2900  |      |  | 2905 |  | 2910 |
| Thr Asn Leu Leu Glu Gly Ser Ile Ser Tyr Ser Glu Leu Arg Pro Asp |   |      |  |      |  |      |
|   | 2915  |      |  | 2920 |  | 2925 |
| Thr Arg Tyr Val Leu Met Asp Gly Ser Ile Ile Gln Phe Pro Asn Thr |   |      |  |      |  |      |
|   | 2930  |      |  | 2935 |  | 2940 |
| Tyr Leu Glu Gly Ser Val Arg Val Val Thr Thr Phe Asp Ala Glu Tyr |   |      |  |      |  |      |
|   | 2945  |      |  | 2950 |  | 2955 |
| Cys Arg His Gly Thr Cys Glu Arg Ser Glu Val Gly Ile Cys Leu Ser |   |      |  |      |  |      |

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2965  
 Thr Ser Gly Arg Trp Val Leu Asn Asn Glu His Tyr Arg Ala Leu Ser  
 2980 2985 2990  
 Gly Val Phe Cys Gly Val Asp Ala Met Asn Leu Ile Ala Asn Ile Phe  
 2995 3000 3005  
 Thr Pro Leu Val Gln Pro Val Gly Ala Leu Asp Val Ser Ala Ser Val  
 3010 3015 3020  
 Val Ala Gly Gly Ile Ile Ala Ile Leu Val Thr Cys Ala Ala Tyr Tyr  
 3025 3030 3035 3040  
 Phe Met Lys Phe Arg Arg Val Phe Gly Glu Tyr Asn His Val Val Ala  
 3045 3050 3055  
 Ala Asn Ala Leu Leu Phe Leu Met Ser Phe Thr Ile Leu Cys Leu Val  
 3060 3065 3070  
 Pro Ala Tyr Ser Phe Leu Pro Gly Val Tyr Ser Val Phe Tyr Leu Tyr  
 3075 3080 3085  
 Leu Thr Phe Tyr Phe Thr Asn Asp Val Ser Phe Leu Ala His Leu Gln  
 3090 3095 3100  
 Trp Phe Ala Met Phe Ser Pro Ile Val Pro Phe Trp Ile Thr Ala Ile  
 3105 3110 3115 3120  
 Tyr Val Phe Cys Ile Ser Leu Lys His Cys His Trp Phe Phe Asn Asn  
 3125 3130 3135  
 Tyr Leu Arg Lys Arg Val Met Phe Asn Gly Val Thr Phe Ser Thr Phe  
 3140 3145 3150  
 Glu Glu Ala Ala Leu Cys Thr Phe Leu Leu Asn Lys Glu Met Tyr Leu  
 3155 3160 3165  
 Lys Leu Arg Ser Glu Thr Leu Leu Pro Leu Thr Gln Tyr Asn Arg Tyr  
 3170 3175 3180  
 Leu Ala Leu Tyr Asn Lys Tyr Lys Tyr Phe Ser Gly Ala Leu Asp Thr  
 3185 3190 3195 3200  
 Thr Ser Tyr Arg Glu Ala Ala Cys Cys His Leu Ala Lys Ala Leu Asn  
 3205 3210 3215  
 Asp Phe Ser Asn Ser Gly Ala Asp Val Leu Tyr Gln Pro Pro Gln Thr  
 3220 3225 3230  
 Ser Ile Thr Ser Ala Val Leu Gln Ser Gly Phe Arg Lys Met Ala Phe  
 3235 3240 3245  
 Pro Ser Gly Lys Val Glu Gly Cys Met Val Gln Val Thr Cys Gly Thr  
 3250 3255 3260  
 Thr Thr Leu Asn Gly Leu Trp Leu Asp Asp Thr Val Tyr Cys Pro Arg  
 3265 3270 3275 3280  
 His Val Ile Cys Thr Ala Glu Asp Met Leu Asn Pro Asn Tyr Glu Asp  
 3285 3290 3295  
 Leu Leu Ile Arg Lys Ser Asn His Ser Phe Leu Val Gln Ala Gly Asn

## 3310

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3635 3640 3645  
 Thr Ser Leu Ser Gly Tyr Arg Leu Lys Asp Cys Val Met Tyr Ala Ser  
 3650 3655 3660  
 Ala Leu Val Leu Leu Ile Leu Met Thr Ala Arg Thr Val Tyr Asp Asp  
 3665 3670 3675 3680  
 Ala Ala Arg Arg Val Trp Thr Leu Met Asn Val Ile Thr Leu Val Tyr  
 3685 3690 3695  
 Lys Val Tyr Tyr Gly Asn Ala Leu Asp Gln Ala Ile Ser Met Trp Ala  
 3700 3705 3710  
 Leu Val Ile Ser Val Thr Ser Asn Tyr Ser Gly Val Val Thr Thr Ile  
 3715 3720 3725  
 Met Phe Leu Ala Arg Ala Ile Val Phe Val Cys Val Glu Tyr Tyr Pro  
 3730 3735 3740  
 Leu Leu Phe Ile Thr Gly Asn Thr Leu Gln Cys Ile Met Leu Val Tyr  
 3745 3750 3755 3760  
 Cys Phe Leu Gly Tyr Cys Cys Cys Cys Tyr Phe Gly Leu Phe Cys Leu  
 3765 3770 3775  
 Leu Asn Arg Tyr Phe Arg Leu Thr Leu Gly Val Tyr Asp Tyr Leu Val  
 3780 3785 3790  
 Ser Thr Gln Glu Phe Arg Tyr Met Asn Ser Gln Gly Leu Leu Pro Pro  
 3795 3800 3805  
 Lys Ser Ser Ile Asp Ala Phe Lys Leu Asn Ile Lys Leu Leu Gly Ile  
 3810 3815 3820  
 Gly Gly Lys Pro Cys Ile Lys Val Ala Thr Val Gln Ser Lys Met Ser  
 3825 3830 3835 3840  
 Asp Val Lys Cys Thr Ser Val Val Leu Leu Ser Val Leu Gln Gln Leu  
 3845 3850 3855  
 Arg Val Glu Ser Ser Ser Lys Leu Trp Ala Gln Cys Val Gln Leu His  
 3860 3865 3870  
 Asn Asp Ile Leu Leu Ala Lys Asp Thr Thr Glu Ala Phe Glu Lys Met  
 3875 3880 3885  
 Val Ser Leu Leu Ser Val Leu Leu Ser Met Gln Gly Ala Val Asp Ile  
 3890 3895 3900  
 Asn Arg Leu Cys Glu Glu Met Leu Asp Asn Arg Ala Thr Leu Gln Ala  
 3905 3910 3915 3920  
 Ile Ala Ser Glu Phe Ser Ser Leu Pro Ser Tyr Ala Ala Tyr Ala Thr  
 3925 3930 3935  
 Ala Gln Glu Ala Tyr Glu Gln Ala Val Ala Asn Gly Asp Ser Glu Val  
 3940 3945 3950  
 Val Leu Lys Lys Leu Lys Lys Ser Leu Asn Val Ala Lys Ser Glu Phe  
 3955 3960 3965  
 Asp Arg Asp Ala Ala Met Gln Arg Lys Leu Glu Lys Met Ala Asp Gln

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3970 3975 3980  
 Ala Met Thr Gln Met Tyr Lys Gln Ala Arg Ser Glu Asp Lys Arg Ala  
 3985 3990 3995 4000  
 Lys Val Thr Ser Ala Met Gln Thr Met Leu Phe Thr Met Leu Arg Lys  
 4005 4010 4015  
 Leu Asp Asn Asp Ala Leu Asn Asn Ile Ile Asn Asn Ala Arg Asp Gly  
 4020 4025 4030  
 Cys Val Pro Leu Asn Ile Ile Pro Leu Thr Thr Ala Ala Lys Leu Met  
 4035 4040 4045  
 Val Val Val Pro Asp Tyr Gly Thr Tyr Lys Asn Thr Cys Asp Gly Asn  
 4050 4055 4060  
 Thr Phe Thr Tyr Ala Ser Ala Leu Trp Glu Ile Gln Gln Val Val Asp  
 4065 4070 4075 4080  
 Ala Asp Ser Lys Ile Val Gln Leu Ser Glu Ile Asn Met Asp Asn Ser  
 4085 4090 4095  
 Pro Asn Leu Ala Trp Pro Leu Ile Val Thr Ala Leu Arg Ala Asn Ser  
 4100 4105 4110  
 Ala Val Lys Leu Gln Asn Asn Glu Leu Ser Pro Val Ala Leu Arg Gln  
 4115 4120 4125  
 Met Ser Cys Ala Ala Gly Thr Thr Gln Thr Ala Cys Thr Asp Asp Asn  
 4130 4135 4140  
 Ala Leu Ala Tyr Tyr Asn Asn Ser Lys Gly Gly Arg Phe Val Leu Ala  
 4145 4150 4155 4160  
 Leu Leu Ser Asp His Gln Asp Leu Lys Trp Ala Arg Phe Pro Lys Ser  
 4165 4170 4175  
 Asp Gly Thr Gly Thr Ile Tyr Thr Glu Leu Glu Pro Pro Cys Arg Phe  
 4180 4185 4190  
 Val Thr Asp Thr Pro Lys Gly Pro Lys Val Lys Tyr Leu Tyr Phe Ile  
 4195 4200 4205  
 Lys Gly Leu Asn Asn Leu Asn Arg Gly Met Val Leu Gly Ser Leu Ala  
 4210 4215 4220  
 Ala Thr Val Arg Leu Gln Ala Gly Asn Ala Thr Glu Val Pro Ala Asn  
 4225 4230 4235 4240  
 Ser Thr Val Leu Ser Phe Cys Ala Phe Ala Val Asp Pro Ala Lys Ala  
 4245 4250 4255  
 Tyr Lys Asp Tyr Leu Ala Ser Gly Gly Gln Pro Ile Thr Asn Cys Val  
 4260 4265 4270  
 Lys Met Leu Cys Thr His Thr Gly Thr Gly Gln Ala Ile Thr Val Thr  
 4275 4280 4285  
 Pro Glu Ala Asn Met Asp Gln Glu Ser Phe Gly Gly Ala Ser Cys Cys  
 4290 4295 4300  
 Leu Tyr Cys Arg Cys His Ile Asp His Pro Asn Pro Lys Gly Phe Cys

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4305                      4310                      4315                      4320

Asp Leu Lys Gly Lys Tyr Val Gln Ile Pro Thr Thr Cys Ala Asn Asp  
                                 4325                      4330                      4335

Pro Val Gly Phe Thr Leu Arg Asn Thr Val Cys Thr Val Cys Gly Met  
                                 4340                      4345                      4350

Trp Lys Gly Tyr Gly Cys Ser Cys Asp Gln Leu Arg Glu Pro Leu Met  
                                 4355                      4360                      4365

Gln Ser Ala Asp Ala Ser Thr Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gly  
                                 4370                      4375                      4380

Val Ser Ala Ala Arg Leu Thr Pro Cys Gly Thr Gly Thr Ser Thr Asp  
4385                      4390                      4395                      4400

Val Val Tyr Arg Ala Phe Asp Ile Tyr Asn Glu Lys Val Ala Gly Phe  
                                 4405                      4410                      4415

Ala Lys Phe Leu Lys Thr Asn Cys Cys Arg Phe Gln Glu Lys Asp Glu  
                                 4420                      4425                      4430

Glu Gly Asn Leu Leu Asp Ser Tyr Phe Val Val Lys Arg His Thr Met  
                                 4435                      4440                      4445

Ser Asn Tyr Gln His Glu Glu Thr Ile Tyr Asn Leu Val Lys Asp Cys  
                                 4450                      4455                      4460

Pro Ala Val Ala Val His Asp Phe Phe Lys Phe Arg Val Asp Gly Asp  
4465                      4470                      4475                      4480

Met Val Pro His Ile Ser Arg Gln Arg Leu Thr Lys Tyr Thr Met Ala  
                                 4485                      4490                      4495

Asp Leu Val Tyr Ala Leu Arg His Phe Asp Glu Gly Asn Cys Asp Thr  
                                 4500                      4505                      4510

Leu Lys Glu Ile Leu Val Thr Tyr Asn Cys Cys Asp Asp Asp Tyr Phe  
                                 4515                      4520                      4525

Asn Lys Lys Asp Trp Tyr Asp Phe Val Glu Asn Pro Asp Ile Leu Arg  
                                 4530                      4535                      4540

Val Tyr Ala Asn Leu Gly Glu Arg Val Arg Gln Ser Leu Leu Lys Thr  
4545                      4550                      4555                      4560

Val Gln Phe Cys Asp Ala Met Arg Asp Ala Gly Ile Val Gly Val Leu  
                                 4565                      4570                      4575

Thr Leu Asp Asn Gln Asp Leu Asn Gly Asn Trp Tyr Asp Phe Gly Asp  
                                 4580                      4585                      4590

Phe Val Gln Val Ala Pro Gly Cys Gly Val Pro Ile Val Asp Ser Tyr  
                                 4595                      4600                      4605

Tyr Ser Leu Leu Met Pro Ile Leu Thr Leu Thr Arg Ala Leu Ala Ala  
                                 4610                      4615                      4620

Glu Ser His Met Asp Ala Asp Leu Ala Lys Pro Leu Ile Lys Trp Asp  
4625                      4630                      4635                      4640

Leu Leu Lys Tyr Asp Phe Thr Glu Glu Arg Leu Cys Leu Phe Asp Arg

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4645  
 Tyr Phe Lys Tyr Trp Asp Gln Thr Tyr His Pro Asn Cys Ile Asn Cys  
 4660 4665 4670  
 Leu Asp Asp Arg Cys Ile Leu His Cys Ala Asn Phe Asn Val Leu Phe  
 4675 4680 4685  
 Ser Thr Val Phe Pro Pro Thr Ser Phe Gly Pro Leu Val Arg Lys Ile  
 4690 4695 4700  
 Phe Val Asp Gly Val Pro Phe Val Val Ser Thr Gly Tyr His Phe Arg  
 4705 4710 4715 4720  
 Glu Leu Gly Val Val His Asn Gln Asp Val Asn Leu His Ser Ser Arg  
 4725 4730 4735  
 Leu Ser Phe Lys Glu Leu Leu Val Tyr Ala Ala Asp Pro Ala Met His  
 4740 4745 4750  
 Ala Ala Ser Gly Asn Leu Leu Leu Asp Lys Arg Thr Thr Cys Phe Ser  
 4755 4760 4765  
 Val Ala Ala Leu Thr Asn Asn Val Ala Phe Gln Thr Val Lys Pro Gly  
 4770 4775 4780  
 Asn Phe Asn Lys Asp Phe Tyr Asp Phe Ala Val Ser Lys Gly Phe Phe  
 4785 4790 4795 4800  
 Lys Glu Gly Ser Ser Val Glu Leu Lys His Phe Phe Phe Ala Gln Asp  
 4805 4810 4815  
 Gly Asn Ala Ala Ile Ser Asp Tyr Asp Tyr Tyr Arg Tyr Asn Leu Pro  
 4820 4825 4830  
 Thr Met Cys Asp Ile Arg Gln Leu Leu Phe Val Val Glu Val Val Asp  
 4835 4840 4845  
 Lys Tyr Phe Asp Cys Tyr Asp Gly Gly Cys Ile Asn Ala Asn Gln Val  
 4850 4855 4860  
 Ile Val Asn Asn Leu Asp Lys Ser Ala Gly Phe Pro Phe Asn Lys Trp  
 4865 4870 4875 4880  
 Gly Lys Ala Arg Leu Tyr Tyr Asp Ser Met Ser Tyr Glu Asp Gln Asp  
 4885 4890 4895  
 Ala Leu Phe Ala Tyr Thr Lys Arg Asn Val Ile Pro Thr Ile Thr Gln  
 4900 4905 4910  
 Met Asn Leu Lys Tyr Ala Ile Ser Ala Lys Asn Arg Ala Arg Thr Val  
 4915 4920 4925  
 Ala Gly Val Ser Ile Cys Ser Thr Met Thr Asn Arg Gln Phe His Gln  
 4930 4935 4940  
 Lys Leu Leu Lys Ser Ile Ala Ala Thr Arg Gly Ala Thr Val Val Ile  
 4945 4950 4955 4960  
 Gly Thr Ser Lys Phe Tyr Gly Gly Trp His Asn Met Leu Lys Thr Val  
 4965 4970 4975  
 Tyr Ser Asp Val Glu Thr Pro His Leu Met Gly Trp Asp Tyr Pro Lys

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4980 4985 4990  
 Cys Asp Arg Ala Met Pro Asn Met Leu Arg Ile Met Ala Ser Leu Val  
 4995 5000 5005  
 Leu Ala Arg Lys His Asn Thr Cys Cys Asn Leu Ser His Arg Phe Tyr  
 5010 5015 5020  
 Arg Leu Ala Asn Glu Cys Ala Gln Val Leu Ser Glu Met Val Met Cys  
 5025 5030 5035 5040  
 Gly Gly Ser Leu Tyr Val Lys Pro Gly Gly Thr Ser Ser Gly Asp Ala  
 5045 5050 5055  
 Thr Thr Ala Tyr Ala Asn Ser Val Phe Asn Ile Cys Gln Ala Val Thr  
 5060 5065 5070  
 Ala Asn Val Asn Ala Leu Leu Ser Thr Asp Gly Asn Lys Ile Ala Asp  
 5075 5080 5085  
 Lys Tyr Val Arg Asn Leu Gln His Arg Leu Tyr Glu Cys Leu Tyr Arg  
 5090 5095 5100  
 Asn Arg Asp Val Asp His Glu Phe Val Asp Glu Phe Tyr Ala Tyr Leu  
 5105 5110 5115 5120  
 Arg Lys His Phe Ser Met Met Ile Leu Ser Asp Asp Ala Val Val Cys  
 5125 5130 5135  
 Tyr Asn Ser Asn Tyr Ala Ala Gln Gly Leu Val Ala Ser Ile Lys Asn  
 5140 5145 5150  
 Phe Lys Ala Val Leu Tyr Tyr Gln Asn Asn Val Phe Met Ser Glu Ala  
 5155 5160 5165  
 Lys Cys Trp Thr Glu Thr Asp Leu Thr Lys Gly Pro His Glu Phe Cys  
 5170 5175 5180  
 Ser Gln His Thr Met Leu Val Lys Gln Gly Asp Asp Tyr Val Tyr Leu  
 5185 5190 5195 5200  
 Pro Tyr Pro Asp Pro Ser Arg Ile Leu Gly Ala Gly Cys Phe Val Asp  
 5205 5210 5215  
 Asp Ile Val Lys Thr Asp Gly Thr Leu Met Ile Glu Arg Phe Val Ser  
 5220 5225 5230  
 Leu Ala Ile Asp Ala Tyr Pro Leu Thr Lys His Pro Asn Gln Glu Tyr  
 5235 5240 5245  
 Ala Asp Val Phe His Leu Tyr Leu Gln Tyr Ile Arg Lys Leu His Asp  
 5250 5255 5260  
 Glu Leu Thr Gly His Met Leu Asp Met Tyr Ser Val Met Leu Thr Asn  
 5265 5270 5275 5280  
 Asp Asn Thr Ser Arg Tyr Trp Glu Pro Glu Phe Tyr Glu Ala Met Tyr  
 5285 5290 5295  
 Thr Pro His Thr Val Leu Gln Ala Val Gly Ala Cys Val Leu Cys Asn  
 5300 5305 5310  
 Ser Gln Thr Ser Leu Arg Cys Gly Ala Cys Ile Arg Arg Pro Phe Leu



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5315                      5320                      5325  
 Cys Cys Lys Cys Cys Tyr Asp His Val Ile Ser Thr Ser His Lys Leu  
     5330                      5335                      5340  
 Val Leu Ser Val Asn Pro Tyr Val Cys Asn Ala Pro Gly Cys Asp Val  
     5345                      5350                      5355                      5360  
 Thr Asp Val Thr Gln Leu Tyr Leu Gly Gly Met Ser Tyr Tyr Cys Lys  
                     5365                      5370                      5375  
 Ser His Lys Pro Pro Ile Ser Phe Pro Leu Cys Ala Asn Gly Gln Val  
                     5380                      5385                      5390  
 Phe Gly Leu Tyr Lys Asn Thr Cys Val Gly Ser Asp Asn Val Thr Asp  
                     5395                      5400                      5405  
 Phe Asn Ala Ile Ala Thr Cys Asp Trp Thr Asn Ala Gly Asp Tyr Ile  
                     5410                      5415                      5420  
 Leu Ala Asn Thr Cys Thr Glu Arg Leu Lys Leu Phe Ala Ala Glu Thr  
     5425                      5430                      5435                      5440  
 Leu Lys Ala Thr Glu Glu Thr Phe Lys Leu Ser Tyr Gly Ile Ala Thr  
                     5445                      5450                      5455  
 Val Arg Glu Val Leu Ser Asp Arg Glu Leu His Leu Ser Trp Glu Val  
                     5460                      5465                      5470  
 Gly Lys Pro Arg Pro Pro Leu Asn Arg Asn Tyr Val Phe Thr Gly Tyr  
                     5475                      5480                      5485  
 Arg Val Thr Lys Asn Ser Lys Val Gln Ile Gly Glu Tyr Thr Phe Glu  
     5490                      5495                      5500  
 Lys Gly Asp Tyr Gly Asp Ala Val Val Tyr Arg Gly Thr Thr Thr Tyr  
     5505                      5510                      5515                      5520  
 Lys Leu Asn Val Gly Asp Tyr Phe Val Leu Thr Ser His Thr Val Met  
                     5525                      5530                      5535  
 Pro Leu Ser Ala Pro Thr Leu Val Pro Gln Glu His Tyr Val Arg Ile  
                     5540                      5545                      5550  
 Thr Gly Leu Tyr Pro Thr Leu Asn Ile Ser Asp Glu Phe Ser Ser Asn  
                     5555                      5560                      5565  
 Val Ala Asn Tyr Gln Lys Val Gly Met Gln Lys Tyr Ser Thr Leu Gln  
     5570                      5575                      5580  
 Gly Pro Pro Gly Thr Gly Lys Ser His Phe Ala Ile Gly Leu Ala Leu  
     5585                      5590                      5595                      5600  
 Tyr Tyr Pro Ser Ala Arg Ile Val Tyr Thr Ala Cys Ser His Ala Ala  
                     5605                      5610                      5615  
 Val Asp Ala Leu Cys Glu Lys Ala Leu Lys Tyr Leu Pro Ile Asp Lys  
                     5620                      5625                      5630  
 Cys Ser Arg Ile Ile Pro Ala Arg Ala Arg Val Glu Cys Phe Asp Lys  
                     5635                      5640                      5645  
 Phe Lys Val Asn Ser Thr Leu Glu Gln Tyr Val Phe Cys Thr Val Asn

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5650                      5655                      5660  
 Ala Leu Pro Glu Thr Thr Ala Asp Ile Val Val Phe Asp Glu Ile Ser  
 5665                      5670                      5675                      5680  
 Met Ala Thr Asn Tyr Asp Leu Ser Val Val Asn Ala Arg Leu Arg Ala  
                                  5685                      5690                      5695  
 Lys His Tyr Val Tyr Ile Gly Asp Pro Ala Gln Leu Pro Ala Pro Arg  
                                  5700                      5705                      5710  
 Thr Leu Leu Thr Lys Gly Thr Leu Glu Pro Glu Tyr Phe Asn Ser Val  
                                  5715                      5720                      5725  
 Cys Arg Leu Met Lys Thr Ile Gly Pro Asp Met Phe Leu Gly Thr Cys  
                                  5730                      5735                      5740  
 Arg Arg Cys Pro Ala Glu Ile Val Asp Thr Val Ser Ala Leu Val Tyr  
 5745                      5750                      5755                      5760  
 Asp Asn Lys Leu Lys Ala His Lys Asp Lys Ser Ala Gln Cys Phe Lys  
                                  5765                      5770                      5775  
 Met Phe Tyr Lys Gly Val Ile Thr His Asp Val Ser Ser Ala Ile Asn  
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 Arg Pro Gln Ile Gly Val Val Arg Glu Phe Leu Thr Arg Asn Pro Ala  
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 Trp Arg Lys Ala Val Phe Ile Ser Pro Tyr Asn Ser Gln Asn Ala Val  
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 Ala Ser Lys Ile Leu Gly Leu Pro Thr Gln Thr Val Asp Ser Ser Gln  
 5825                      5830                      5835                      5840  
 Gly Ser Glu Tyr Asp Tyr Val Ile Phe Thr Gln Thr Thr Glu Thr Ala  
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 His Ser Cys Asn Val Asn Arg Phe Asn Val Ala Ile Thr Arg Ala Lys  
                                  5860                      5865                      5870  
 Ile Gly Ile Leu Cys Ile Met Ser Asp Arg Asp Leu Tyr Asp Lys Leu  
                                  5875                      5880                      5885  
 Gln Phe Thr Ser Leu Glu Ile Pro Arg Arg Asn Val Ala Thr Leu Gln  
                                  5890                      5895                      5900  
 Ala Glu Asn Val Thr Gly Leu Phe Lys Asp Cys Ser Lys Ile Ile Thr  
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 Gly Leu His Pro Thr Gln Ala Pro Thr His Leu Ser Val Asp Ile Lys  
                                  5925                      5930                      5935  
 Phe Lys Thr Glu Gly Leu Cys Val Asp Ile Pro Gly Ile Pro Lys Asp  
                                  5940                      5945                      5950  
 Met Thr Tyr Arg Arg Leu Ile Ser Met Met Gly Phe Lys Met Asn Tyr  
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 Gln Val Asn Gly Tyr Pro Asn Met Phe Ile Thr Arg Glu Glu Ala Ile  
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 Arg His Val Arg Ala Trp Ile Gly Phe Asp Val Glu Gly Cys His Ala

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5985                      5990                      5995                      6000

Thr Arg Asp Ala Val Gly Thr Asn Leu Pro Leu Gln Leu Gly Phe Ser  
6005                      6010                      6015

Thr Gly Val Asn Leu Val Ala Val Pro Thr Gly Tyr Val Asp Thr Glu  
6020                      6025                      6030

Asn Asn Thr Glu Phe Thr Arg Val Asn Ala Lys Pro Pro Pro Gly Asp  
6035                      6040                      6045

Gln Phe Lys His Leu Ile Pro Leu Met Tyr Lys Gly Leu Pro Trp Asn  
6050                      6055                      6060

Val Val Arg Ile Lys Ile Val Gln Met Leu Ser Asp Thr Leu Lys Gly  
6065                      6070                      6075                      6080

Leu Ser Asp Arg Val Val Phe Val Leu Trp Ala His Gly Phe Glu Leu  
6085                      6090                      6095

Thr Ser Met Lys Tyr Phe Val Lys Ile Gly Pro Glu Arg Thr Cys Cys  
6100                      6105                      6110

Leu Cys Asp Lys Arg Ala Thr Cys Phe Ser Thr Ser Ser Asp Thr Tyr  
6115                      6120                      6125

Ala Cys Trp Asn His Ser Val Gly Phe Asp Tyr Val Tyr Asn Pro Phe  
6130                      6135                      6140

Met Ile Asp Val Gln Gln Trp Gly Phe Thr Gly Asn Leu Gln Ser Asn  
6145                      6150                      6155                      6160

His Asp Gln His Cys Gln Val His Gly Asn Ala His Val Ala Ser Cys  
6165                      6170                      6175

Asp Ala Ile Met Thr Arg Cys Leu Ala Val His Glu Cys Phe Val Lys  
6180                      6185                      6190

Arg Val Asp Trp Ser Val Glu Tyr Pro Ile Ile Gly Asp Glu Leu Arg  
6195                      6200                      6205

Val Asn Ser Ala Cys Arg Lys Val Gln His Met Val Val Lys Ser Ala  
6210                      6215                      6220

Leu Leu Ala Asp Lys Phe Pro Val Leu His Asp Ile Gly Asn Pro Lys  
6225                      6230                      6235                      6240

Ala Ile Lys Cys Val Pro Gln Ala Glu Val Glu Trp Lys Phe Tyr Asp  
6245                      6250                      6255

Ala Gln Pro Cys Ser Asp Lys Ala Tyr Lys Ile Glu Glu Leu Phe Tyr  
6260                      6265                      6270

Ser Tyr Ala Thr His His Asp Lys Phe Thr Asp Gly Val Cys Leu Phe  
6275                      6280                      6285

Trp Asn Cys Asn Val Asp Arg Tyr Pro Ala Asn Ala Ile Val Cys Arg  
6290                      6295                      6300

Phe Asp Thr Arg Val Leu Ser Asn Leu Asn Leu Pro Gly Cys Asp Gly  
6305                      6310                      6315                      6320

Gly Ser Leu Tyr Val Asn Lys His Ala Phe His Thr Pro Ala Phe Asp

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6325

6330

6335

Lys Ser Ala Phe Thr Asn Leu Lys Gln Leu Pro Phe Phe Tyr Tyr Ser  
6340 6345 6350  
Asp Ser Pro Cys Glu Ser His Gly Lys Gln Val Val Ser Asp Ile Asp  
6355 6360 6365  
Tyr Val Pro Leu Lys Ser Ala Thr Cys Ile Thr Arg Cys Asn Leu Gly  
6370 6375 6380  
Gly Ala Val Cys Arg His His Ala Asn Glu Tyr Arg Gln Tyr Leu Asp  
6385 6390 6395 6400  
Ala Tyr Asn Met Met Ile Ser Ala Gly Phe Ser Leu Trp Ile Tyr Lys  
6405 6410 6415  
Gln Phe Asp Thr Tyr Asn Leu Trp Asn Thr Phe Thr Arg Leu Gln Ser  
6420 6425 6430  
Leu Glu Asn Val Ala Tyr Asn Val Val Asn Lys Gly His Phe Asp Gly  
6435 6440 6445  
His Ala Gly Glu Ala Pro Val Ser Ile Ile Asn Asn Ala Val Tyr Thr  
6450 6455 6460  
Lys Val Asp Gly Ile Asp Val Glu Ile Phe Glu Asn Lys Thr Thr Leu  
6465 6470 6475 6480  
Pro Val Asn Val Ala Phe Glu Leu Trp Ala Lys Arg Asn Ile Lys Pro  
6485 6490 6495  
Val Pro Glu Ile Lys Ile Leu Asn Asn Leu Gly Val Asp Ile Ala Ala  
6500 6505 6510  
Asn Thr Val Ile Trp Asp Tyr Lys Arg Glu Ala Pro Ala His Val Ser  
6515 6520 6525  
Thr Ile Gly Val Cys Thr Met Thr Asp Ile Ala Lys Lys Pro Thr Glu  
6530 6535 6540  
Ser Ala Cys Ser Ser Leu Thr Val Leu Phe Asp Gly Arg Val Glu Gly  
6545 6550 6555 6560  
Gln Val Asp Leu Phe Arg Asn Ala Arg Asn Gly Val Leu Ile Thr Glu  
6565 6570 6575  
Gly Ser Val Lys Gly Leu Thr Pro Ser Lys Gly Pro Ala Gln Ala Ser  
6580 6585 6590  
Val Asn Gly Val Thr Leu Ile Gly Glu Ser Val Lys Thr Gln Phe Asn  
6595 6600 6605  
Tyr Phe Lys Lys Val Asp Gly Ile Ile Gln Gln Leu Pro Glu Thr Tyr  
6610 6615 6620  
Phe Thr Gln Ser Arg Asp Leu Glu Asp Phe Lys Pro Arg Ser Gln Met  
6625 6630 6635 6640  
Glu Thr Asp Phe Leu Glu Leu Ala Met Asp Glu Phe Ile Gln Arg Tyr  
6645 6650 6655  
Lys Leu Glu Gly Tyr Ala Phe Glu His Ile Val Tyr Gly Asp Phe Ser

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6660 6665 6670  
 His Gly Gln Leu Gly Gly Leu His Leu Met Ile Gly Leu Ala Lys Arg  
 6675 6680 6685  
 Ser Gln Asp Ser Pro Leu Lys Leu Glu Asp Phe Ile Pro Met Asp Ser  
 6690 6695 6700  
 Thr Val Lys Asn Tyr Phe Ile Thr Asp Ala Gln Thr Gly Ser Ser Lys  
 6705 6710 6715 6720  
 Cys val Cys Ser val Ile Asp Leu Leu Leu Asp Asp Phe val Glu Ile  
 6725 6730 6735  
 Ile Lys Ser Gln Asp Leu Ser val Ile Ser Lys val val Lys val Thr  
 6740 6745 6750  
 Ile Asp Tyr Ala Glu Ile Ser Phe Met Leu Trp Cys Lys Asp Gly His  
 6755 6760 6765  
 val Glu Thr Phe Tyr Pro Lys Leu Gln Ala Ser Arg Ala Trp Gln Pro  
 6770 6775 6780  
 Gly val Ala Met Pro Asn Leu Tyr Lys Met Gln Arg Met Leu Leu Glu  
 6785 6790 6795 6800  
 Lys Cys Asp Leu Gln Asn Tyr Gly Glu Asn Ala val Ile Pro Lys Gly  
 6805 6810 6815  
 Ile Met Met Asn val Ala Lys Tyr Thr Gln Leu Cys Gln Tyr Leu Asn  
 6820 6825 6830  
 Thr Leu Thr Leu Ala val Pro Tyr Asn Met Arg val Ile His Phe Gly  
 6835 6840 6845  
 Ala Gly Ser Asp Lys Gly val Ala Pro Gly Thr Ala val Leu Arg Gln  
 6850 6855 6860  
 Trp Leu Pro Thr Gly Thr Leu Leu val Asp Ser Asp Leu Asn Asp Phe  
 6865 6870 6875 6880  
 val Ser Asp Ala Tyr Ser Thr Leu Ile Gly Asp Cys Ala Thr val His  
 6885 6890 6895  
 Thr Ala Asn Lys Trp Asp Leu Ile Ile Ser Asp Met Tyr Asp Pro Arg  
 6900 6905  
 Thr Lys His val Thr Lys Glu Asn Asp Ser Lys Glu Gly Phe Phe Thr  
 6915 6920 6925  
 Tyr Leu Cys Gly Phe Ile Lys Gln Lys Leu Ala Leu Gly Gly Ser Ile  
 6930 6935 6940  
 Ala val Lys Ile Thr Glu His Ser Trp Asn Ala Asp Leu Tyr Lys Leu  
 6945 6950 6955 6960  
 Met Gly His Phe Ser Trp Trp Thr Ala Phe val Thr Asn val Asn Ala  
 6965 6970 6975  
 Ser Ser Ser Glu Ala Phe Leu Ile Gly Ala Asn Tyr Leu Gly Lys Pro  
 6980 6985 6990  
 Lys Glu Gln Ile Asp Gly Tyr Thr Met His Ala Asn Tyr Ile Phe Trp

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7005

6995

7000

Arg Asn Thr Asn Pro Ile Gln Leu Ser Ser Tyr Ser Leu Phe Asp Met  
7010 7015 7020  
Ser Lys Phe Pro Leu Lys Leu Arg Gly Thr Ala Val Met Ser Leu Lys  
7025 7030 7035 7040  
Glu Asn Gln Ile Asn Asp Met Ile Tyr Ser Leu Leu Glu Lys Gly Arg  
7045 7050 7055  
Leu Ile Ile Arg Glu Asn Asn Arg Val Val Val Ser Ser Asp Ile Leu  
7060 7065 7070

Val Asn Asn  
7075

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<212> PRT  
<213> SARS coronavirus  
  
<220>  
<221> misc\_feature  
<222> 4376...4384  
<223> Xaa is any amino acid

<400> 7243  
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Ser Leu Pro Val Leu Gln Val Arg Asp Val Leu Val Arg Gly Phe Gly  
20 25 30  
Asp Ser Val Glu Glu Ala Leu Ser Glu Ala Arg Glu His Leu Lys Asn  
35 40 45  
Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val Leu Pro Gln Leu  
50 55 60  
Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala Leu Ser Thr Asn  
65 70 75 80  
His Gly His Lys Val Val Glu Leu Val Ala Glu Met Asp Gly Ile Gln  
85 90 95  
Tyr Gly Arg Ser Gly Ile Thr Leu Gly Val Leu Val Pro His Val Gly  
100 105 110  
Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg Lys Asn Gly Asn  
115 120 125  
Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu Lys Ser Tyr Asp  
130 135 140  
Leu Gly Asp Glu Leu Gly Thr Asp Pro Ile Glu Asp Tyr Glu Gln Asn  
145 150 155 160  
Trp Asn Thr Lys His Gly Ser Gly Ala Leu Arg Glu Leu Thr Arg Glu  
165 170 175  
Leu Asn Gly Gly Ala Val Thr Arg Tyr Val Asp Asn Asn Phe Cys Gly  
180 185 190

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Pro Asp Gly Tyr Pro Leu Asp Cys Ile Lys Asp Phe Leu Ala Arg Ala  
 195 200 205  
 Gly Lys Ser Met Cys Thr Leu Ser Glu Gln Leu Asp Tyr Ile Glu Ser  
 210 215 220  
 Lys Arg Gly Val Tyr Cys Cys Arg Asp His Glu His Glu Ile Ala Trp  
 225 230 235 240  
 Phe Thr Glu Arg Ser Asp Lys Ser Tyr Glu His Gln Thr Pro Phe Glu  
 245 250 255  
 Ile Lys Ser Ala Lys Lys Phe Asp Thr Phe Lys Gly Glu Cys Pro Lys  
 260 265 270  
 Phe Val Phe Pro Leu Asn Ser Lys Val Lys Val Ile Gln Pro Arg Val  
 275 280 285  
 Glu Lys Lys Lys Thr Glu Gly Phe Met Gly Arg Ile Arg Ser Val Tyr  
 290 295 300  
 Pro Val Ala Ser Pro Gln Glu Cys Asn Asn Met His Leu Ser Thr Leu  
 305 310 315 320  
 Met Lys Cys Asn His Cys Asp Glu Val Ser Trp Gln Thr Cys Asp Phe  
 325 330 335  
 Leu Lys Ala Thr Cys Glu His Cys Gly Thr Glu Asn Leu Val Ile Glu  
 340 345 350  
 Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met  
 355 360 365  
 Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val  
 370 375 380  
 Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly  
 385 390 395 400  
 Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys  
 405 410 415  
 Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly  
 420 425 430  
 Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu  
 435 440 445  
 Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val  
 450 455 460  
 Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe  
 465 470 475 480  
 Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr  
 485 490 495  
 Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr  
 500 505 510  
 Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser  
 515 520 525

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Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala Ala Gly Val Ile  
530 535 540

Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pro  
545 550 555 560

Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln  
565 570 575

Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser Asp Leu Leu Thr  
580 585 590

Asn Ser Val Ile Ile Met Ala Tyr Val Thr Gly Gly Leu Val Gln Gln  
595 600 605

Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr Val Glu Lys Leu  
610 615 620

Arg Pro Ile Phe Glu Trp Ile Glu Ala Lys Leu Ser Ala Gly Val Glu  
625 630 635 640

Phe Leu Lys Asp Ala Trp Glu Ile Leu Lys Phe Leu Ile Thr Gly Val  
645 650 655

Phe Asp Ile Val Lys Gly Gln Ile Gln Val Ala Ser Asp Asn Ile Lys  
660 665 670

Asp Cys Val Lys Cys Phe Ile Asp Val Val Asn Lys Ala Leu Glu Met  
675 680 685

Cys Ile Asp Gln Val Thr Ile Ala Gly Ala Lys Leu Arg Ser Leu Asn  
690 695 700

Leu Gly Glu Val Phe Ile Ala Gln Ser Lys Gly Leu Tyr Arg Gln Cys  
705 710 715 720

Ile Arg Gly Lys Glu Gln Leu Gln Leu Leu Met Pro Leu Lys Ala Pro  
725 730 735

Lys Glu Val Thr Phe Leu Glu Gly Asp Ser His Asp Thr Val Leu Thr  
740 745 750

Ser Glu Glu Val Val Leu Lys Asn Gly Glu Leu Glu Ala Leu Glu Thr  
755 760 765

Pro Val Asp Ser Phe Thr Asn Gly Ala Ile Val Gly Thr Pro Val Cys  
770 775 780

Val Asn Gly Leu Met Leu Leu Glu Ile Lys Asp Lys Glu Gln Tyr Cys  
785 790 795 800

Ala Leu Ser Pro Gly Leu Leu Ala Thr Asn Asn Val Phe Arg Leu Lys  
805 810 815

Gly Gly Ala Pro Ile Lys Gly Val Thr Phe Gly Glu Asp Thr Val Trp  
820 825 830

Glu Val Gln Gly Tyr Lys Asn Val Arg Ile Thr Phe Glu Leu Asp Glu  
835 840 845

Arg Val Asp Lys Val Leu Asn Glu Lys Cys Ser Val Tyr Thr Val Glu  
850 855 860



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Ser Gly Thr Glu Val Thr Glu Phe Ala Cys Val Val Ala Glu Ala Val  
865 870 875 880  
Val Lys Thr Leu Gln Pro Val Ser Asp Leu Leu Thr Asn Met Gly Ile  
885 890 895  
Asp Leu Asp Glu Trp Ser Val Ala Thr Phe Tyr Leu Phe Asp Asp Ala  
900 905 910  
Gly Glu Glu Asn Phe Ser Ser Arg Met Tyr Cys Ser Phe Tyr Pro Pro  
915 920 925  
Asp Glu Glu Glu Glu Asp Asp Ala Glu Cys Glu Glu Glu Glu Ile Asp  
930 935 940  
Glu Thr Cys Glu His Glu Tyr Gly Thr Glu Asp Asp Tyr Gln Gly Leu  
945 950 955 960  
Pro Leu Glu Phe Gly Ala Ser Ala Glu Thr Val Arg Val Glu Glu Glu  
965 970 975  
Glu Glu Glu Asp Trp Leu Asp Asp Thr Thr Glu Gln Ser Glu Ile Glu  
980 985 990  
Pro Glu Pro Glu Pro Thr Pro Glu Glu Pro Val Asn Gln Phe Thr Gly  
995 1000 1005  
Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Ile Val  
1010 1015 1020  
Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala Ala Asn  
1025 1030 1035 1040  
Ile His Leu Lys His Gly Gly Gly Val Ala Gly Ala Leu Asn Lys Ala  
1045 1050 1055  
Thr Asn Gly Ala Met Gln Lys Glu Ser Asp Asp Tyr Ile Lys Leu Asn  
1060 1065 1070  
Gly Pro Leu Thr Val Gly Gly Ser Cys Leu Leu Ser Gly His Asn Leu  
1075 1080 1085  
Ala Lys Lys Cys Leu His Val Val Gly Pro Asn Leu Asn Ala Gly Glu  
1090 1095 1100  
Asp Ile Gln Leu Leu Lys Ala Ala Tyr Glu Asn Phe Asn Ser Gln Asp  
1105 1110 1115 1120  
Ile Leu Leu Ala Pro Leu Leu Ser Ala Gly Ile Phe Gly Ala Lys Pro  
1125 1130 1135  
Leu Gln Ser Leu Gln Val Cys Val Gln Thr Val Arg Thr Gln Val Tyr  
1140 1145 1150  
Ile Ala Val Asn Asp Lys Ala Leu Tyr Glu Gln Val Val Met Asp Tyr  
1155 1160 1165  
Leu Asp Asn Leu Lys Pro Arg Val Glu Ala Pro Lys Gln Glu Glu Pro  
1170 1175 1180  
Pro Asn Thr Glu Asp Ser Lys Thr Glu Glu Lys Ser Val Val Gln Lys  
1185 1190 1195 1200

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Pro Val Asp Val Lys Pro Lys Ile Lys Ala Cys Ile Asp Glu Val Thr  
1205 1210 1215

Thr Thr Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys Leu Leu Leu Phe  
1220 1225 1230

Ala Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln Asn Met Leu Arg  
1235 1240 1245

Gly Glu Asp Met Ser Phe Leu Glu Lys Asp Ala Pro Tyr Met Val Gly  
1250 1255 1260

Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val Ile Pro Ser Lys  
1265 1270 1275 1280

Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala Leu Lys Lys Val  
1285 1290 1295

Pro Val Asp Glu Tyr Ile Thr Thr Tyr Pro Gly Gln Gly Cys Ala Gly  
1300 1305 1310

Tyr Thr Leu Glu Glu Ala Lys Thr Ala Leu Lys Lys Cys Lys Ser Ala  
1315 1320 1325

Phe Tyr Val Leu Pro Ser Glu Ala Pro Asn Ala Lys Glu Glu Ile Leu  
1330 1335 1340

Gly Thr Val Ser Trp Asn Leu Arg Glu Met Leu Ala His Ala Glu Glu  
1345 1350 1355 1360

Thr Arg Lys Leu Met Pro Ile Cys Met Asp Val Arg Ala Ile Met Ala  
1365 1370 1375

Thr Ile Gln Arg Lys Tyr Lys Gly Ile Lys Ile Gln Glu Gly Ile Val  
1380 1385 1390

Asp Tyr Gly Val Arg Phe Phe Phe Tyr Thr Ser Lys Glu Pro Val Ala  
1395 1400 1405

Ser Ile Ile Thr Lys Leu Asn Ser Leu Asn Glu Pro Leu Val Thr Met  
1410 1415 1420

Pro Ile Gly Tyr Val Thr His Gly Phe Asn Leu Glu Glu Ala Ala Arg  
1425 1430 1435 1440

Cys Met Arg Ser Leu Lys Ala Pro Ala Val Val Ser Val Ser Ser Pro  
1445 1450 1455

Asp Ala Val Thr Thr Tyr Asn Gly Tyr Leu Thr Ser Ser Ser Lys Thr  
1460 1465 1470

Ser Glu Glu His Phe Val Glu Thr Val Ser Leu Ala Gly Ser Tyr Arg  
1475 1480 1485

Asp Trp Ser Tyr Ser Gly Gln Arg Thr Glu Leu Gly Val Glu Phe Leu  
1490 1495 1500

Lys Arg Gly Asp Lys Ile Val Tyr His Thr Leu Glu Ser Pro Val Glu  
1505 1510 1515 1520

Phe His Leu Asp Gly Glu Val Leu Ser Leu Asp Lys Leu Lys Ser Leu  
1525 1530 1535

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Leu Ser Leu Arg Glu Val Lys Thr Ile Lys Val Phe Thr Thr Val Asp  
 1540 1545 1550  
 Asn Thr Asn Leu His Thr Gln Leu Val Asp Met Ser Met Thr Tyr Gly  
 1555 1560 1565  
 Gln Gln Phe Gly Pro Thr Tyr Leu Asp Gly Ala Asp Val Thr Lys Ile  
 1570 1575 1580  
 Lys Pro His Val Asn His Glu Gly Lys Thr Phe Phe Val Leu Pro Ser  
 1585 1590 1595 1600  
 Asp Asp Thr Leu Arg Ser Glu Ala Phe Glu Tyr Tyr His Thr Leu Asp  
 1605 1610 1615  
 Glu Ser Phe Leu Gly Arg Tyr Met Ser Ala Leu Asn His Thr Lys Lys  
 1620 1625 1630  
 Trp Lys Phe Pro Gln Val Gly Gly Leu Thr Ser Ile Lys Trp Ala Asp  
 1635 1640 1645  
 Asn Asn Cys Tyr Leu Ser Ser Val Leu Leu Ala Leu Gln Gln Leu Glu  
 1650 1655 1660  
 Val Lys Phe Asn Ala Pro Ala Leu Gln Glu Ala Tyr Tyr Arg Ala Arg  
 1665 1670 1675 1680  
 Ala Gly Asp Ala Ala Asn Phe Cys Ala Leu Ile Leu Ala Tyr Ser Asn  
 1685 1690 1695  
 Lys Thr Val Gly Glu Leu Gly Asp Val Arg Glu Thr Met Thr His Leu  
 1700 1705 1710  
 Leu Gln His Ala Asn Leu Glu Ser Ala Lys Arg Val Leu Asn Val Val  
 1715 1720 1725  
 Cys Lys His Cys Gly Gln Lys Thr Thr Thr Leu Thr Gly Val Glu Ala  
 1730 1735 1740  
 Val Met Tyr Met Gly Thr Leu Ser Tyr Asp Asn Leu Lys Thr Gly Val  
 1745 1750 1755 1760  
 Ser Ile Pro Cys Val Cys Gly Arg Asp Ala Thr Gln Tyr Leu Val Gln  
 1765 1770 1775  
 Gln Glu Ser Ser Phe Val Met Met Ser Ala Pro Pro Ala Glu Tyr Lys  
 1780 1785 1790  
 Leu Gln Gln Gly Thr Phe Leu Cys Ala Asn Glu Tyr Thr Gly Asn Tyr  
 1795 1800 1805  
 Gln Cys Gly His Tyr Thr His Ile Thr Ala Lys Glu Thr Leu Tyr Arg  
 1810 1815 1820  
 Ile Asp Gly Ala His Leu Thr Lys Met Ser Glu Tyr Lys Gly Pro Val  
 1825 1830 1835 1840  
 Thr Asp Val Phe Tyr Lys Glu Thr Ser Tyr Thr Thr Thr Ile Lys Pro  
 1845 1850 1855  
 Val Ser Tyr Lys Leu Asp Gly Val Thr Tyr Thr Glu Ile Glu Pro Lys  
 1860 1865 1870

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Leu Asp Gly Tyr Tyr Lys Lys Asp Asn Ala Tyr Tyr Thr Glu Gln Pro  
 1875 1880 1885  
 Ile Asp Leu Val Pro Thr Gln Pro Leu Pro Asn Ala Ser Phe Asp Asn  
 1890 1895 1900  
 Phe Lys Leu Thr Cys Ser Asn Thr Lys Phe Ala Asp Asp Leu Asn Gln  
 1905 1910 1915 1920  
 Met Thr Gly Phe Thr Lys Pro Ala Ser Arg Glu Leu Ser Val Thr Phe  
 1925 1930 1935  
 Phe Pro Asp Leu Asn Gly Asp Val Val Ala Ile Asp Tyr Arg His Tyr  
 1940 1945 1950  
 Ser Ala Ser Phe Lys Lys Gly Ala Lys Leu Leu His Lys Pro Ile Val  
 1955 1960 1965  
 Trp His Ile Asn Gln Ala Thr Thr Lys Thr Thr Phe Lys Pro Asn Thr  
 1970 1975 1980  
 Trp Cys Leu Arg Cys Leu Trp Ser Thr Lys Pro Val Asp Thr Ser Asn  
 1985 1990 1995 2000  
 Ser Phe Glu Val Leu Ala Val Glu Asp Thr Gln Gly Met Asp Asn Leu  
 2005 2010 2015  
 Ala Cys Glu Ser Gln Gln Pro Thr Ser Glu Glu Val Val Glu Asn Pro  
 2020 2025 2030  
 Thr Ile Gln Lys Glu Val Ile Glu Cys Asp Val Lys Thr Thr Glu Val  
 2035 2040 2045  
 Val Gly Asn Val Ile Leu Lys Pro Ser Asp Glu Gly Val Lys Val Thr  
 2050 2055 2060  
 Gln Glu Leu Gly His Glu Asp Leu Met Ala Ala Tyr Val Glu Asn Thr  
 2065 2070 2075 2080  
 Ser Ile Thr Ile Lys Lys Pro Asn Glu Leu Ser Leu Ala Leu Gly Leu  
 2085 2090 2095  
 Lys Thr Ile Ala Thr His Gly Ile Ala Ala Ile Asn Ser Val Pro Trp  
 2100 2105 2110  
 Ser Lys Ile Leu Ala Tyr Val Lys Pro Phe Leu Gly Gln Ala Ala Ile  
 2115 2120 2125  
 Thr Thr Ser Asn Cys Ala Lys Arg Leu Ala Gln Arg Val Phe Asn Asn  
 2130 2135 2140  
 Tyr Met Pro Tyr Val Phe Thr Leu Leu Phe Gln Leu Cys Thr Phe Thr  
 2145 2150 2155 2160  
 Lys Ser Thr Asn Ser Arg Ile Arg Ala Ser Leu Pro Thr Thr Ile Ala  
 2165 2170 2175  
 Lys Asn Ser Val Lys Ser Val Ala Lys Leu Cys Leu Asp Ala Gly Ile  
 2180 2185 2190  
 Asn Tyr Val Lys Ser Pro Lys Phe Ser Lys Leu Phe Thr Ile Ala Met  
 2195 2200 2205

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Trp Leu Leu Leu Leu Ser Ile Cys Leu Gly Ser Leu Ile Cys Val Thr  
 2210 2215 2220  
 Ala Ala Phe Gly Val Leu Leu Ser Asn Phe Gly Ala Pro Ser Tyr Cys  
 2225 2230 2235 2240  
 Asn Gly Val Arg Glu Leu Tyr Leu Asn Ser Ser Asn Val Thr Thr Met  
 2245 2250 2255  
 Asp Phe Cys Glu Gly Ser Phe Pro Cys Ser Ile Cys Leu Ser Gly Leu  
 2260 2265 2270  
 Asp Ser Leu Asp Ser Tyr Pro Ala Leu Glu Thr Ile Gln Val Thr Ile  
 2275 2280 2285  
 Ser Ser Tyr Lys Leu Asp Leu Thr Ile Leu Gly Leu Ala Ala Glu Trp  
 2290 2295 2300  
 Val Leu Ala Tyr Met Leu Phe Thr Lys Phe Phe Tyr Leu Leu Gly Leu  
 2305 2310 2315 2320  
 Ser Ala Ile Met Gln Val Phe Phe Gly Tyr Phe Ala Ser His Phe Ile  
 2325 2330 2335  
 Ser Asn Ser Trp Leu Met Trp Phe Ile Ile Ser Ile Val Gln Met Ala  
 2340 2345 2350  
 Pro Val Ser Ala Met Val Arg Met Tyr Ile Phe Phe Ala Ser Phe Tyr  
 2355 2360 2365  
 Tyr Ile Trp Lys Ser Tyr Val His Ile Met Asp Gly Cys Thr Ser Ser  
 2370 2375 2380  
 Thr Cys Met Met Cys Tyr Lys Arg Asn Arg Ala Thr Arg Val Glu Cys  
 2385 2390 2395 2400  
 Thr Thr Ile Val Asn Gly Met Lys Arg Ser Phe Tyr Val Tyr Ala Asn  
 2405 2410 2415  
 Gly Gly Arg Gly Phe Cys Lys Thr His Asn Trp Asn Cys Leu Asn Cys  
 2420 2425 2430  
 Asp Thr Phe Cys Thr Gly Ser Thr Phe Ile Ser Asp Glu Val Ala Arg  
 2435 2440 2445  
 Asp Leu Ser Leu Gln Phe Lys Arg Pro Ile Asn Pro Thr Asp Gln Ser  
 2450 2455 2460  
 Ser Tyr Ile Val Asp Ser Val Ala Val Lys Asn Gly Ala Leu His Leu  
 2465 2470 2475 2480  
 Tyr Phe Asp Lys Ala Gly Gln Lys Thr Tyr Glu Arg His Pro Leu Ser  
 2485 2490 2495  
 His Phe Val Asn Leu Asp Asn Leu Arg Ala Asn Asn Thr Lys Gly Ser  
 2500 2505 2510  
 Leu Pro Ile Asn Val Ile Val Phe Asp Gly Lys Ser Lys Cys Asp Glu  
 2515 2520 2525  
 Ser Ala Ser Lys Ser Ala Ser Val Tyr Tyr Ser Gln Leu Met Cys Gln  
 2530 2535 2540

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Pro Ile Leu Leu Leu Asp Gln Ala Leu Val Ser Asp Val Gly Asp Ser  
 2545 2550 2555 2560  
 Thr Glu Val Ser Val Lys Met Phe Asp Ala Tyr Val Asp Thr Phe Ser  
 2565 2570 2575  
 Ala Thr Phe Ser Val Pro Met Glu Lys Leu Lys Ala Leu Val Ala Thr  
 2580 2585 2590  
 Ala His Ser Glu Leu Ala Lys Gly Val Ala Leu Asp Gly Val Leu Ser  
 2595 2600 2605  
 Thr Phe Val Ser Ala Ala Arg Gln Gly Val Val Asp Thr Asp Val Asp  
 2610 2615 2620  
 Thr Lys Asp Val Ile Glu Cys Leu Lys Leu Ser His His Ser Asp Leu  
 2625 2630 2635 2640  
 Glu Val Thr Gly Asp Ser Cys Asn Asn Phe Met Leu Thr Tyr Asn Lys  
 2645 2650 2655  
 Val Glu Asn Met Thr Pro Arg Asp Leu Gly Ala Cys Ile Asp Cys Asn  
 2660 2665 2670  
 Ala Arg His Ile Asn Ala Gln Val Ala Lys Ser His Asn Val Ser Leu  
 2675 2680 2685  
 Ile Trp Asn Val Lys Asp Tyr Met Ser Leu Ser Glu Gln Leu Arg Lys  
 2690 2695 2700  
 Gln Ile Arg Ser Ala Ala Lys Lys Asn Asn Ile Pro Phe Arg Leu Thr  
 2705 2710 2715 2720  
 Cys Ala Thr Thr Arg Gln Val Val Asn Val Ile Thr Thr Lys Ile Ser  
 2725 2730 2735  
 Leu Lys Gly Gly Lys Ile Val Ser Thr Cys Phe Lys Leu Met Leu Lys  
 2740 2745 2750  
 Ala Thr Leu Leu Cys Val Leu Ala Ala Leu Val Cys Tyr Ile Val Met  
 2755 2760 2765  
 Pro Val His Thr Leu Ser Ile His Asp Gly Tyr Thr Asn Glu Ile Ile  
 2770 2775 2780  
 Gly Tyr Lys Ala Ile Gln Asp Gly Val Thr Arg Asp Ile Ile Ser Thr  
 2785 2790 2795 2800  
 Asp Asp Cys Phe Ala Asn Lys His Ala Gly Phe Asp Ala Trp Phe Ser  
 2805 2810 2815  
 Gln Arg Gly Gly Ser Tyr Lys Asn Asp Lys Ser Cys Pro Val Val Ala  
 2820 2825 2830  
 Ala Ile Ile Thr Arg Glu Ile Gly Phe Ile Val Pro Gly Leu Pro Gly  
 2835 2840 2845  
 Thr Val Leu Arg Ala Ile Asn Gly Asp Phe Leu His Phe Leu Pro Arg  
 2850 2855 2860  
 Val Phe Ser Ala Val Gly Asn Ile Cys Tyr Thr Pro Ser Lys Leu Ile  
 2865 2870 2875 2880

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Glu Tyr Ser Asp Phe Ala Thr Ser Ala Cys Val Leu Ala Ala Glu Cys  
 2885 2890 2895  
 Thr Ile Phe Lys Asp Ala Met Gly Lys Pro Val Pro Tyr Cys Tyr Asp  
 2900 2905 2910  
 Thr Asn Leu Leu Glu Gly Ser Ile Ser Tyr Ser Glu Leu Arg Pro Asp  
 2915 2920 2925  
 Thr Arg Tyr Val Leu Met Asp Gly Ser Ile Ile Gln Phe Pro Asn Thr  
 2930 2935 2940  
 Tyr Leu Glu Gly Ser Val Arg Val Val Thr Thr Phe Asp Ala Glu Tyr  
 2945 2950 2955 2960  
 Cys Arg His Gly Thr Cys Glu Arg Ser Glu Val Gly Ile Cys Leu Ser  
 2965 2970 2975  
 Thr Ser Gly Arg Trp Val Leu Asn Asn Glu His Tyr Arg Ala Leu Ser  
 2980 2985 2990  
 Gly Val Phe Cys Gly Val Asp Ala Met Asn Leu Ile Ala Asn Ile Phe  
 2995 3000 3005  
 Thr Pro Leu Val Gln Pro Val Gly Ala Leu Asp Val Ser Ala Ser Val  
 3010 3015 3020  
 Val Ala Gly Gly Ile Ile Ala Ile Leu Val Thr Cys Ala Ala Tyr Tyr  
 3025 3030 3035 3040  
 Phe Met Lys Phe Arg Arg Val Phe Gly Glu Tyr Asn His Val Val Ala  
 3045 3050 3055  
 Ala Asn Ala Leu Leu Phe Leu Met Ser Phe Thr Ile Leu Cys Leu Val  
 3060 3065 3070  
 Pro Ala Tyr Ser Phe Leu Pro Gly Val Tyr Ser Val Phe Tyr Leu Tyr  
 3075 3080 3085  
 Leu Thr Phe Tyr Phe Thr Asn Asp Val Ser Phe Leu Ala His Leu Gln  
 3090 3095 3100  
 Trp Phe Ala Met Phe Ser Pro Ile Val Pro Phe Trp Ile Thr Ala Ile  
 3105 3110 3115 3120  
 Tyr Val Phe Cys Ile Ser Leu Lys His Cys His Trp Phe Phe Asn Asn  
 3125 3130 3135  
 Tyr Leu Arg Lys Arg Val Met Phe Asn Gly Val Thr Phe Ser Thr Phe  
 3140 3145 3150  
 Glu Glu Ala Ala Leu Cys Thr Phe Leu Leu Asn Lys Glu Met Tyr Leu  
 3155 3160 3165  
 Lys Leu Arg Ser Glu Thr Leu Leu Pro Leu Thr Gln Tyr Asn Arg Tyr  
 3170 3175 3180  
 Leu Ala Leu Tyr Asn Lys Tyr Lys Tyr Phe Ser Gly Ala Leu Asp Thr  
 3185 3190 3195 3200  
 Thr Ser Tyr Arg Glu Ala Ala Cys Cys His Leu Ala Lys Ala Leu Asn  
 3205 3210 3215

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Asp Phe Ser Asn Ser Gly Ala Asp Val Leu Tyr Gln Pro Pro Gln Thr  
 3220 3225 3230  
 Ser Ile Thr Ser Ala Val Leu Gln Ser Gly Phe Arg Lys Met Ala Phe  
 3235 3240 3245  
 Pro Ser Gly Lys Val Glu Gly Cys Met Val Gln Val Thr Cys Gly Thr  
 3250 3255 3260  
 Thr Thr Leu Asn Gly Leu Trp Leu Asp Asp Thr Val Tyr Cys Pro Arg  
 3265 3270 3275 3280  
 His Val Ile Cys Thr Ala Glu Asp Met Leu Asn Pro Asn Tyr Glu Asp  
 3285 3290 3295  
 Leu Leu Ile Arg Lys Ser Asn His Ser Phe Leu Val Gln Ala Gly Asn  
 3300 3310  
 Val Gln Leu Arg Val Ile Gly His Ser Met Gln Asn Cys Leu Leu Arg  
 3315 3320 3325  
 Leu Lys Val Asp Thr Ser Asn Pro Lys Thr Pro Lys Tyr Lys Phe Val  
 3330 3335 3340  
 Arg Ile Gln Pro Gly Gln Thr Phe Ser Val Leu Ala Cys Tyr Asn Gly  
 3345 3350 3355 3360  
 Ser Pro Ser Gly Val Tyr Gln Cys Ala Met Arg Pro Asn His Thr Ile  
 3365 3370 3375  
 Lys Gly Ser Phe Leu Asn Gly Ser Cys Gly Ser Val Gly Phe Asn Ile  
 3380 3385 3390  
 Asp Tyr Asp Cys Val Ser Phe Cys Tyr Met His His Met Glu Leu Pro  
 3395 3400 3405  
 Thr Gly Val His Ala Gly Thr Asp Leu Glu Gly Lys Phe Tyr Gly Pro  
 3410 3415 3420  
 Phe Val Asp Arg Gln Thr Ala Gln Ala Ala Gly Thr Asp Thr Thr Ile  
 3425 3430 3435 3440  
 Thr Leu Asn Val Leu Ala Trp Leu Tyr Ala Ala Val Ile Asn Gly Asp  
 3445 3450 3455  
 Arg Trp Phe Leu Asn Arg Phe Thr Thr Thr Leu Asn Asp Phe Asn Leu  
 3460 3465 3470  
 Val Ala Met Lys Tyr Asn Tyr Glu Pro Leu Thr Gln Asp His Val Asp  
 3475 3480 3485  
 Ile Leu Gly Pro Leu Ser Ala Gln Thr Gly Ile Ala Val Leu Asp Met  
 3490 3495 3500  
 Cys Ala Ala Leu Lys Glu Leu Leu Gln Asn Gly Met Asn Gly Arg Thr  
 3505 3510 3515 3520  
 Ile Leu Gly Ser Thr Ile Leu Glu Asp Glu Phe Thr Pro Phe Asp Val  
 3525 3530 3535  
 Val Arg Gln Cys Ser Gly Val Thr Phe Gln Gly Lys Phe Lys Lys Ile  
 3540 3545 3550



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Val Lys Gly Thr His His Trp Met Leu Leu Thr Phe Leu Thr Ser Leu  
 3555 3560 3565  
 Leu Ile Leu Val Gln Ser Thr Gln Trp Ser Leu Phe Phe Phe Val Tyr  
 3570 3575 3580  
 Glu Asn Ala Phe Leu Pro Phe Thr Leu Gly Ile Met Ala Ile Ala Ala  
 3585 3590 3595 3600  
 Cys Ala Met Leu Leu Val Lys His Lys His Ala Phe Leu Cys Leu Phe  
 3605 3610 3615  
 Leu Leu Pro Ser Leu Ala Thr Val Ala Tyr Phe Asn Met Val Tyr Met  
 3620 3625 3630  
 Pro Ala Ser Trp Val Met Arg Ile Met Thr Trp Leu Glu Leu Ala Asp  
 3635 3640 3645  
 Thr Ser Leu Ser Gly Tyr Arg Leu Lys Asp Cys Val Met Tyr Ala Ser  
 3650 3655 3660  
 Ala Leu Val Leu Leu Ile Leu Met Thr Ala Arg Thr Val Tyr Asp Asp  
 3665 3670 3675 3680  
 Ala Ala Arg Arg Val Trp Thr Leu Met Asn Val Ile Thr Leu Val Tyr  
 3685 3690 3695  
 Lys Val Tyr Tyr Gly Asn Ala Leu Asp Gln Ala Ile Ser Met Trp Ala  
 3700 3705 3710  
 Leu Val Ile Ser Val Thr Ser Asn Tyr Ser Gly Val Val Thr Thr Ile  
 3715 3720 3725  
 Met Phe Leu Ala Arg Ala Ile Val Phe Val Cys Val Glu Tyr Tyr Pro  
 3730 3735 3740  
 Leu Leu Phe Ile Thr Gly Asn Thr Leu Gln Cys Ile Met Leu Val Tyr  
 3745 3750 3755 3760  
 Cys Phe Leu Gly Tyr Cys Cys Cys Cys Tyr Phe Gly Leu Phe Cys Leu  
 3765 3770 3775  
 Leu Asn Arg Tyr Phe Arg Leu Thr Leu Gly Val Tyr Asp Tyr Leu Val  
 3780 3785 3790  
 Ser Thr Gln Glu Phe Arg Tyr Met Asn Ser Gln Gly Leu Leu Pro Pro  
 3795 3800 3805  
 Lys Ser Ser Ile Asp Ala Phe Lys Leu Asn Ile Lys Leu Leu Gly Ile  
 3810 3815 3820  
 Gly Gly Lys Pro Cys Ile Lys Val Ala Thr Val Gln Ser Lys Met Ser  
 3825 3830 3835 3840  
 Asp Val Lys Cys Thr Ser Val Val Leu Leu Ser Val Leu Gln Gln Leu  
 3845 3850 3855  
 Arg Val Glu Ser Ser Ser Lys Leu Trp Ala Gln Cys Val Gln Leu His  
 3860 3865 3870  
 Asn Asp Ile Leu Leu Ala Lys Asp Thr Thr Glu Ala Phe Glu Lys Met  
 3875 3880 3885

SEQLIST-20480.TXT

Val Ser Leu Leu Ser Val Leu Leu Ser Met Gln Gly Ala Val Asp Ile  
3890 3895 3900

Asn Arg Leu Cys Glu Glu Met Leu Asp Asn Arg Ala Thr Leu Gln Ala  
3905 3910 3915 3920

Ile Ala Ser Glu Phe Ser Ser Leu Pro Ser Tyr Ala Ala Tyr Ala Thr  
3925 3930 3935

Ala Gln Glu Ala Tyr Glu Gln Ala Val Ala Asn Gly Asp Ser Glu Val  
3940 3945 3950

Val Leu Lys Lys Leu Lys Lys Ser Leu Asn Val Ala Lys Ser Glu Phe  
3955 3960 3965

Asp Arg Asp Ala Ala Met Gln Arg Lys Leu Glu Lys Met Ala Asp Gln  
3970 3975 3980

Ala Met Thr Gln Met Tyr Lys Gln Ala Arg Ser Glu Asp Lys Arg Ala  
3985 3990 3995 4000

Lys Val Thr Ser Ala Met Gln Thr Met Leu Phe Thr Met Leu Arg Lys  
4005 4010 4015

Leu Asp Asn Asp Ala Leu Asn Asn Ile Ile Asn Asn Ala Arg Asp Gly  
4020 4025 4030

Cys Val Pro Leu Asn Ile Ile Pro Leu Thr Thr Ala Ala Lys Leu Met  
4035 4040 4045

Val Val Val Pro Asp Tyr Gly Thr Tyr Lys Asn Thr Cys Asp Gly Asn  
4050 4055 4060

Thr Phe Thr Tyr Ala Ser Ala Leu Trp Glu Ile Gln Gln Val Val Asp  
4065 4070 4075 4080

Ala Asp Ser Lys Ile Val Gln Leu Ser Glu Ile Asn Met Asp Asn Ser  
4085 4090 4095

Pro Asn Leu Ala Trp Pro Leu Ile Val Thr Ala Leu Arg Ala Asn Ser  
4100 4105 4110

Ala Val Lys Leu Gln Asn Asn Glu Leu Ser Pro Val Ala Leu Arg Gln  
4115 4120 4125

Met Ser Cys Ala Ala Gly Thr Thr Gln Thr Ala Cys Thr Asp Asp Asn  
4130 4135 4140

Ala Leu Ala Tyr Tyr Asn Asn Ser Lys Gly Gly Arg Phe Val Leu Ala  
4145 4150 4155 4160

Leu Leu Ser Asp His Gln Asp Leu Lys Trp Ala Arg Phe Pro Lys Ser  
4165 4170 4175

Asp Gly Thr Gly Thr Ile Tyr Thr Glu Leu Glu Pro Pro Cys Arg Phe  
4180 4185 4190

Val Thr Asp Thr Pro Lys Gly Pro Lys Val Lys Tyr Leu Tyr Phe Ile  
4195 4200 4205

Lys Gly Leu Asn Asn Leu Asn Arg Gly Met Val Leu Gly Ser Leu Ala  
4210 4215 4220

SEQLIST-20480.TXT

Ala Thr Val Arg Leu Gln Ala Gly Asn Ala Thr Glu Val Pro Ala Asn  
4225 4230 4235 4240

Ser Thr Val Leu Ser Phe Cys Ala Phe Ala Val Asp Pro Ala Lys Ala  
4245 4250 4255

Tyr Lys Asp Tyr Leu Ala Ser Gly Gly Gln Pro Ile Thr Asn Cys Val  
4260 4265 4270

Lys Met Leu Cys Thr His Thr Gly Thr Gly Gln Ala Ile Thr Val Thr  
4275 4280 4285

Pro Glu Ala Asn Met Asp Gln Glu Ser Phe Gly Gly Ala Ser Cys Cys  
4290 4295 4300

Leu Tyr Cys Arg Cys His Ile Asp His Pro Asn Pro Lys Gly Phe Cys  
4305 4310 4315 4320

Asp Leu Lys Gly Lys Tyr Val Gln Ile Pro Thr Thr Cys Ala Asn Asp  
4325 4330 4335

Pro Val Gly Phe Thr Leu Arg Asn Thr Val Cys Thr Val Cys Gly Met  
4340 4345 4350

Trp Lys Gly Tyr Gly Cys Ser Cys Asp Gln Leu Arg Glu Pro Leu Met  
4355 4360 4365

Gln Ser Ala Asp Ala Ser Thr Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
4370 4375 4380

Gly Val Ser Ala Ala Arg Leu Thr Pro Cys Gly Thr Gly Thr Ser Thr  
4385 4390 4395 4400

Asp Val Val Tyr Arg Ala Phe Asp Ile Tyr Asn Glu Lys Val Ala Gly  
4405 4410 4415

Phe Ala Lys Phe Leu Lys Thr Asn Cys Cys Arg Phe Gln Glu Lys Asp  
4420 4425 4430

Glu Glu Gly Asn Leu Leu Asp Ser Tyr Phe Val Val Lys Arg His Thr  
4435 4440 4445

Met Ser Asn Tyr Gln His Glu Glu Thr Ile Tyr Asn Leu Val Lys Asp  
4450 4455 4460

Cys Pro Ala Val Ala Val His Asp Phe Phe Lys Phe Arg Val Asp Gly  
4465 4470 4475 4480

Asp Met Val Pro His Ile Ser Arg Gln Arg Leu Thr Lys Tyr Thr Met  
4485 4490 4495

Ala Asp Leu Val Tyr Ala Leu Arg His Phe Asp Glu Gly Asn Cys Asp  
4500 4505 4510

Thr Leu Lys Glu Ile Leu Val Thr Tyr Asn Cys Cys Asp Asp Asp Tyr  
4515 4520 4525

Phe Asn Lys Lys Asp Trp Tyr Asp Phe Val Glu Asn Pro Asp Ile Leu  
4530 4535 4540

Arg Val Tyr Ala Asn Leu Gly Glu Arg Val Arg Gln Ser Leu Leu Lys  
4545 4550 4555 4560

SEQLIST-20480.TXT

Thr Val Gln Phe Cys Asp Ala Met Arg Asp Ala Gly Ile Val Gly Val  
4565 4570 4575

Leu Thr Leu Asp Asn Gln Asp Leu Asn Gly Asn Trp Tyr Asp Phe Gly  
4580 4585 4590

Asp Phe Val Gln Val Ala Pro Gly Cys Gly Val Pro Ile Val Asp Ser  
4595 4600 4605

Tyr Tyr Ser Leu Leu Met Pro Ile Leu Thr Leu Thr Arg Ala Leu Ala  
4610 4615 4620

Ala Glu Ser His Met Asp Ala Asp Leu Ala Lys Pro Leu Ile Lys Trp  
4625 4630 4635 4640

Asp Leu Leu Lys Tyr Asp Phe Thr Glu Glu Arg Leu Cys Leu Phe Asp  
4645 4650 4655

Arg Tyr Phe Lys Tyr Trp Asp Gln Thr Tyr His Pro Asn Cys Ile Asn  
4660 4665 4670

Cys Leu Asp Asp Arg Cys Ile Leu His Cys Ala Asn Phe Asn Val Leu  
4675 4680 4685

Phe Ser Thr Val Phe Pro Pro Thr Ser Phe Gly Pro Leu Val Arg Lys  
4690 4695 4700

Ile Phe Val Asp Gly Val Pro Phe Val Val Ser Thr Gly Tyr His Phe  
4705 4710 4715 4720

Arg Glu Leu Gly Val Val His Asn Gln Asp Val Asn Leu His Ser Ser  
4725 4730 4735

Arg Leu Ser Phe Lys Glu Leu Leu Val Tyr Ala Ala Asp Pro Ala Met  
4740 4745 4750

His Ala Ala Ser Gly Asn Leu Leu Leu Asp Lys Arg Thr Thr Cys Phe  
4755 4760 4765

Ser Val Ala Ala Leu Thr Asn Asn Val Ala Phe Gln Thr Val Lys Pro  
4770 4775 4780

Gly Asn Phe Asn Lys Asp Phe Tyr Asp Phe Ala Val Ser Lys Gly Phe  
4785 4790 4795 4800

Phe Lys Glu Gly Ser Ser Val Glu Leu Lys His Phe Phe Phe Ala Gln  
4805 4810 4815

Asp Gly Asn Ala Ala Ile Ser Asp Tyr Asp Tyr Tyr Arg Tyr Asn Leu  
4820 4825 4830

Pro Thr Met Cys Asp Ile Arg Gln Leu Leu Phe Val Val Glu Val Val  
4835 4840 4845

Asp Lys Tyr Phe Asp Cys Tyr Asp Gly Gly Cys Ile Asn Ala Asn Gln  
4850 4855 4860

Val Ile Val Asn Asn Leu Asp Lys Ser Ala Gly Phe Pro Phe Asn Lys  
4865 4870 4875 4880

Trp Gly Lys Ala Arg Leu Tyr Tyr Asp Ser Met Ser Tyr Glu Asp Gln  
4885 4890 4895

SEQLIST-20480.TXT

Asp Ala Leu Phe Ala Tyr Thr Lys Arg Asn Val Ile Pro Thr Ile Thr  
 4900 4905 4910  
 Gln Met Asn Leu Lys Tyr Ala Ile Ser Ala Lys Asn Arg Ala Arg Thr  
 4915 4920 4925  
 Val Ala Gly Val Ser Ile Cys Ser Thr Met Thr Asn Arg Gln Phe His  
 4930 4935 4940  
 Gln Lys Leu Leu Lys Ser Ile Ala Ala Thr Arg Gly Ala Thr Val Val  
 4945 4950 4955 4960  
 Ile Gly Thr Ser Lys Phe Tyr Gly Gly Trp His Asn Met Leu Lys Thr  
 4965 4970 4975  
 Val Tyr Ser Asp Val Glu Thr Pro His Leu Met Gly Trp Asp Tyr Pro  
 4980 4985 4990  
 Lys Cys Asp Arg Ala Met Pro Asn Met Leu Arg Ile Met Ala Ser Leu  
 4995 5000 5005  
 Val Leu Ala Arg Lys His Asn Thr Cys Cys Asn Leu Ser His Arg Phe  
 5010 5015 5020  
 Tyr Arg Leu Ala Asn Glu Cys Ala Gln Val Leu Ser Glu Met Val Met  
 5025 5030 5035 5040  
 Cys Gly Gly Ser Leu Tyr Val Lys Pro Gly Gly Thr Ser Ser Gly Asp  
 5045 5050 5055  
 Ala Thr Thr Ala Tyr Ala Asn Ser Val Phe Asn Ile Cys Gln Ala Val  
 5060 5065 5070  
 Thr Ala Asn Val Asn Ala Leu Leu Ser Thr Asp Gly Asn Lys Ile Ala  
 5075 5080 5085  
 Asp Lys Tyr Val Arg Asn Leu Gln His Arg Leu Tyr Glu Cys Leu Tyr  
 5090 5095 5100  
 Arg Asn Arg Asp Val Asp His Glu Phe Val Asp Glu Phe Tyr Ala Tyr  
 5105 5110 5115 5120  
 Leu Arg Lys His Phe Ser Met Met Ile Leu Ser Asp Asp Ala Val Val  
 5125 5130 5135  
 Cys Tyr Asn Ser Asn Tyr Ala Ala Gln Gly Leu Val Ala Ser Ile Lys  
 5140 5145 5150  
 Asn Phe Lys Ala Val Leu Tyr Tyr Gln Asn Asn Val Phe Met Ser Glu  
 5155 5160 5165  
 Ala Lys Cys Trp Thr Glu Thr Asp Leu Thr Lys Gly Pro His Glu Phe  
 5170 5175 5180  
 Cys Ser Gln His Thr Met Leu Val Lys Gln Gly Asp Asp Tyr Val Tyr  
 5185 5190 5195 5200  
 Leu Pro Tyr Pro Asp Pro Ser Arg Ile Leu Gly Ala Gly Cys Phe Val  
 5205 5210 5215  
 Asp Asp Ile Val Lys Thr Asp Gly Thr Leu Met Ile Glu Arg Phe Val  
 5220 5225 5230

SEQLIST-20480.TXT

Ser Leu Ala Ile Asp Ala Tyr Pro Leu Thr Lys His Pro Asn Gln Glu  
5235 5240 5245

Tyr Ala Asp Val Phe His Leu Tyr Leu Gln Tyr Ile Arg Lys Leu His  
5250 5255 5260

Asp Glu Leu Thr Gly His Met Leu Asp Met Tyr Ser Val Met Leu Thr  
5265 5270 5275 5280

Asn Asp Asn Thr Ser Arg Tyr Trp Glu Pro Glu Phe Tyr Glu Ala Met  
5285 5290 5295

Tyr Thr Pro His Thr Val Leu Gln Ala Val Gly Ala Cys Val Leu Cys  
5300 5305 5310

Asn Ser Gln Thr Ser Leu Arg Cys Gly Ala Cys Ile Arg Arg Pro Phe  
5315 5320 5325

Leu Cys Cys Lys Cys Cys Tyr Asp His Val Ile Ser Thr Ser His Lys  
5330 5335 5340

Leu Val Leu Ser Val Asn Pro Tyr Val Cys Asn Ala Pro Gly Cys Asp  
5345 5350 5355 5360

Val Thr Asp Val Thr Gln Leu Tyr Leu Gly Gly Met Ser Tyr Tyr Cys  
5365 5370 5375

Lys Ser His Lys Pro Pro Ile Ser Phe Pro Leu Cys Ala Asn Gly Gln  
5380 5385 5390

Val Phe Gly Leu Tyr Lys Asn Thr Cys Val Gly Ser Asp Asn Val Thr  
5395 5400 5405

Asp Phe Asn Ala Ile Ala Thr Cys Asp Trp Thr Asn Ala Gly Asp Tyr  
5410 5415 5420

Ile Leu Ala Asn Thr Cys Thr Glu Arg Leu Lys Leu Phe Ala Ala Glu  
5425 5430 5435 5440

Thr Leu Lys Ala Thr Glu Glu Thr Phe Lys Leu Ser Tyr Gly Ile Ala  
5445 5450 5455

Thr Val Arg Glu Val Leu Ser Asp Arg Glu Leu His Leu Ser Trp Glu  
5460 5465 5470

Val Gly Lys Pro Arg Pro Pro Leu Asn Arg Asn Tyr Val Phe Thr Gly  
5475 5480 5485

Tyr Arg Val Thr Lys Asn Ser Lys Val Gln Ile Gly Glu Tyr Thr Phe  
5490 5495 5500

Glu Lys Gly Asp Tyr Gly Asp Ala Val Val Tyr Arg Gly Thr Thr Thr  
5505 5510 5515 5520

Tyr Lys Leu Asn Val Gly Asp Tyr Phe Val Leu Thr Ser His Thr Val  
5525 5530 5535

Met Pro Leu Ser Ala Pro Thr Leu Val Pro Gln Glu His Tyr Val Arg  
5540 5545 5550

Ile Thr Gly Leu Tyr Pro Thr Leu Asn Ile Ser Asp Glu Phe Ser Ser  
5555 5560 5565

SEQLIST-20480.TXT

Asn Val Ala Asn Tyr Gln Lys Val Gly Met Gln Lys Tyr Ser Thr Leu  
 5570 5575 5580  
 Gln Gly Pro Pro Gly Thr Gly Lys Ser His Phe Ala Ile Gly Leu Ala  
 5585 5590 5595 5600  
 Leu Tyr Tyr Pro Ser Ala Arg Ile Val Tyr Thr Ala Cys Ser His Ala  
 5605 5610 5615  
 Ala Val Asp Ala Leu Cys Glu Lys Ala Leu Lys Tyr Leu Pro Ile Asp  
 5620 5625 5630  
 Lys Cys Ser Arg Ile Ile Pro Ala Arg Ala Arg Val Glu Cys Phe Asp  
 5635 5640 5645  
 Lys Phe Lys Val Asn Ser Thr Leu Glu Gln Tyr Val Phe Cys Thr Val  
 5650 5655 5660  
 Asn Ala Leu Pro Glu Thr Thr Ala Asp Ile Val Val Phe Asp Glu Ile  
 5665 5670 5675 5680  
 Ser Met Ala Thr Asn Tyr Asp Leu Ser Val Val Asn Ala Arg Leu Arg  
 5685 5690 5695  
 Ala Lys His Tyr Val Tyr Ile Gly Asp Pro Ala Gln Leu Pro Ala Pro  
 5700 5705 5710  
 Arg Thr Leu Leu Thr Lys Gly Thr Leu Glu Pro Glu Tyr Phe Asn Ser  
 5715 5720 5725  
 Val Cys Arg Leu Met Lys Thr Ile Gly Pro Asp Met Phe Leu Gly Thr  
 5730 5735 5740  
 Cys Arg Arg Cys Pro Ala Glu Ile Val Asp Thr Val Ser Ala Leu Val  
 5745 5750 5755 5760  
 Tyr Asp Asn Lys Leu Lys Ala His Lys Asp Lys Ser Ala Gln Cys Phe  
 5765 5770 5775  
 Lys Met Phe Tyr Lys Gly Val Ile Thr His Asp Val Ser Ser Ala Ile  
 5780 5785 5790  
 Asn Arg Pro Gln Ile Gly Val Val Arg Glu Phe Leu Thr Arg Asn Pro  
 5795 5800 5805  
 Ala Trp Arg Lys Ala Val Phe Ile Ser Pro Tyr Asn Ser Gln Asn Ala  
 5810 5815 5820  
 Val Ala Ser Lys Ile Leu Gly Leu Pro Thr Gln Thr Val Asp Ser Ser  
 5825 5830 5835 5840  
 Gln Gly Ser Glu Tyr Asp Tyr Val Ile Phe Thr Gln Thr Thr Glu Thr  
 5845 5850 5855  
 Ala His Ser Cys Asn Val Asn Arg Phe Asn Val Ala Ile Thr Arg Ala  
 5860 5865 5870  
 Lys Ile Gly Ile Leu Cys Ile Met Ser Asp Arg Asp Leu Tyr Asp Lys  
 5875 5880 5885  
 Leu Gln Phe Thr Ser Leu Glu Ile Pro Arg Arg Asn Val Ala Thr Leu  
 5890 5895 5900

SEQLIST-20480.TXT

Gln Ala Glu Asn Val Thr Gly Leu Phe Lys Asp Cys Ser Lys Ile Ile  
5905 5910 5915 5920

Thr Gly Leu His Pro Thr Gln Ala Pro Thr His Leu Ser Val Asp Ile  
5925 5930 5935

Lys Phe Lys Thr Glu Gly Leu Cys Val Asp Ile Pro Gly Ile Pro Lys  
5940 5945 5950

Asp Met Thr Tyr Arg Arg Leu Ile Ser Met Met Gly Phe Lys Met Asn  
5955 5960 5965

Tyr Gln Val Asn Gly Tyr Pro Asn Met Phe Ile Thr Arg Glu Glu Ala  
5970 5975 5980

Ile Arg His Val Arg Ala Trp Ile Gly Phe Asp Val Glu Gly Cys His  
5985 5990 5995 6000

Ala Thr Arg Asp Ala Val Gly Thr Asn Leu Pro Leu Gln Leu Gly Phe  
6005 6010 6015

Ser Thr Gly Val Asn Leu Val Ala Val Pro Thr Gly Tyr Val Asp Thr  
6020 6025 6030

Glu Asn Asn Thr Glu Phe Thr Arg Val Asn Ala Lys Pro Pro Pro Gly  
6035 6040 6045

Asp Gln Phe Lys His Leu Ile Pro Leu Met Tyr Lys Gly Leu Pro Trp  
6050 6055 6060

Asn Val Val Arg Ile Lys Ile Val Gln Met Leu Ser Asp Thr Leu Lys  
6065 6070 6075 6080

Gly Leu Ser Asp Arg Val Val Phe Val Leu Trp Ala His Gly Phe Glu  
6085 6090 6095

Leu Thr Ser Met Lys Tyr Phe Val Lys Ile Gly Pro Glu Arg Thr Cys  
6100 6105 6110

Cys Leu Cys Asp Lys Arg Ala Thr Cys Phe Ser Thr Ser Ser Asp Thr  
6115 6120 6125

Tyr Ala Cys Trp Asn His Ser Val Gly Phe Asp Tyr Val Tyr Asn Pro  
6130 6135 6140

Phe Met Ile Asp Val Gln Gln Trp Gly Phe Thr Gly Asn Leu Gln Ser  
6145 6150 6155 6160

Asn His Asp Gln His Cys Gln Val His Gly Asn Ala His Val Ala Ser  
6165 6170 6175

Cys Asp Ala Ile Met Thr Arg Cys Leu Ala Val His Glu Cys Phe Val  
6180 6185 6190

Lys Arg Val Asp Trp Ser Val Glu Tyr Pro Ile Ile Gly Asp Glu Leu  
6195 6200 6205

Arg Val Asn Ser Ala Cys Arg Lys Val Gln His Met Val Val Lys Ser  
6210 6215 6220

Ala Leu Leu Ala Asp Lys Phe Pro Val Leu His Asp Ile Gly Asn Pro  
6225 6230 6235 6240



SEQLIST-20480.TXT

Lys Ala Ile Lys Cys Val Pro Gln Ala Glu Val Glu Trp Lys Phe Tyr  
 6245 6250 6255  
 Asp Ala Gln Pro Cys Ser Asp Lys Ala Tyr Lys Ile Glu Glu Leu Phe  
 6260 6265 6270  
 Tyr Ser Tyr Ala Thr His His Asp Lys Phe Thr Asp Gly Val Cys Leu  
 6275 6280 6285  
 Phe Trp Asn Cys Asn Val Asp Arg Tyr Pro Ala Asn Ala Ile Val Cys  
 6290 6295 6300  
 Arg Phe Asp Thr Arg Val Leu Ser Asn Leu Asn Leu Pro Gly Cys Asp  
 6305 6310 6315 6320  
 Gly Gly Ser Leu Tyr Val Asn Lys His Ala Phe His Thr Pro Ala Phe  
 6325 6330 6335  
 Asp Lys Ser Ala Phe Thr Asn Leu Lys Gln Leu Pro Phe Phe Tyr Tyr  
 6340 6345 6350  
 Ser Asp Ser Pro Cys Glu Ser His Gly Lys Gln Val Val Ser Asp Ile  
 6355 6360 6365  
 Asp Tyr Val Pro Leu Lys Ser Ala Thr Cys Ile Thr Arg Cys Asn Leu  
 6370 6375 6380  
 Gly Gly Ala Val Cys Arg His His Ala Asn Glu Tyr Arg Gln Tyr Leu  
 6385 6390 6395 6400  
 Asp Ala Tyr Asn Met Met Ile Ser Ala Gly Phe Ser Leu Trp Ile Tyr  
 6405 6410 6415  
 Lys Gln Phe Asp Thr Tyr Asn Leu Trp Asn Thr Phe Thr Arg Leu Gln  
 6420 6425 6430  
 Ser Leu Glu Asn Val Ala Tyr Asn Val Val Asn Lys Gly His Phe Asp  
 6435 6440 6445  
 Gly His Ala Gly Glu Ala Pro Val Ser Ile Ile Asn Asn Ala Val Tyr  
 6450 6455 6460  
 Thr Lys Val Asp Gly Ile Asp Val Glu Ile Phe Glu Asn Lys Thr Thr  
 6465 6470 6475 6480  
 Leu Pro Val Asn Val Ala Phe Glu Leu Trp Ala Lys Arg Asn Ile Lys  
 6485 6490 6495  
 Pro Val Pro Glu Ile Lys Ile Leu Asn Asn Leu Gly Val Asp Ile Ala  
 6500 6505 6510  
 Ala Asn Thr Val Ile Trp Asp Tyr Lys Arg Glu Ala Pro Ala His Val  
 6515 6520 6525  
 Ser Thr Ile Gly Val Cys Thr Met Thr Asp Ile Ala Lys Lys Pro Thr  
 6530 6535 6540  
 Glu Ser Ala Cys Ser Ser Leu Thr Val Leu Phe Asp Gly Arg Val Glu  
 6545 6550 6555 6560  
 Gly Gln Val Asp Leu Phe Arg Asn Ala Arg Asn Gly Val Leu Ile Thr  
 6565 6570 6575

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Glu Gly Ser Val Lys Gly Leu Thr Pro Ser Lys Gly Pro Ala Gln Ala  
 6580 6585 6590  
 Ser Val Asn Gly Val Thr Leu Ile Gly Glu Ser Val Lys Thr Gln Phe  
 6595 6600 6605  
 Asn Tyr Phe Lys Lys Val Asp Gly Ile Ile Gln Gln Leu Pro Glu Thr  
 6610 6615 6620  
 Tyr Phe Thr Gln Ser Arg Asp Leu Glu Asp Phe Lys Pro Arg Ser Gln  
 6625 6630 6635 6640  
 Met Glu Thr Asp Phe Leu Glu Leu Ala Met Asp Glu Phe Ile Gln Arg  
 6645 6650 6655  
 Tyr Lys Leu Glu Gly Tyr Ala Phe Glu His Ile Val Tyr Gly Asp Phe  
 6660 6665 6670  
 Ser His Gly Gln Leu Gly Gly Leu His Leu Met Ile Gly Leu Ala Lys  
 6675 6680 6685  
 Arg Ser Gln Asp Ser Pro Leu Lys Leu Glu Asp Phe Ile Pro Met Asp  
 6690 6695 6700  
 Ser Thr Val Lys Asn Tyr Phe Ile Thr Asp Ala Gln Thr Gly Ser Ser  
 6705 6710 6715 6720  
 Lys Cys Val Cys Ser Val Ile Asp Leu Leu Leu Asp Asp Phe Val Glu  
 6725 6730 6735  
 Ile Ile Lys Ser Gln Asp Leu Ser Val Ile Ser Lys Val Val Lys Val  
 6740 6745 6750  
 Thr Ile Asp Tyr Ala Glu Ile Ser Phe Met Leu Trp Cys Lys Asp Gly  
 6755 6760 6765  
 His Val Glu Thr Phe Tyr Pro Lys Leu Gln Ala Ser Arg Ala Trp Gln  
 6770 6775 6780  
 Pro Gly Val Ala Met Pro Asn Leu Tyr Lys Met Gln Arg Met Leu Leu  
 6785 6790 6795 6800  
 Glu Lys Cys Asp Leu Gln Asn Tyr Gly Glu Asn Ala Val Ile Pro Lys  
 6805 6810 6815  
 Gly Ile Met Met Asn Val Ala Lys Tyr Thr Gln Leu Cys Gln Tyr Leu  
 6820 6825 6830  
 Asn Thr Leu Thr Leu Ala Val Pro Tyr Asn Met Arg Val Ile His Phe  
 6835 6840 6845  
 Gly Ala Gly Ser Asp Lys Gly Val Ala Pro Gly Thr Ala Val Leu Arg  
 6850 6855 6860  
 Gln Trp Leu Pro Thr Gly Thr Leu Leu Val Asp Ser Asp Leu Asn Asp  
 6865 6870 6875 6880  
 Phe Val Ser Asp Ala Tyr Ser Thr Leu Ile Gly Asp Cys Ala Thr Val  
 6885 6890 6895  
 His Thr Ala Asn Lys Trp Asp Leu Ile Ile Ser Asp Met Tyr Asp Pro  
 6900 6905 6910

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Arg Thr Lys His Val Thr Lys Glu Asn Asp Ser Lys Glu Gly Phe Phe  
6915 6920 6925

Thr Tyr Leu Cys Gly Phe Ile Lys Gln Lys Leu Ala Leu Gly Gly Ser  
6930 6935 6940

Ile Ala Val Lys Ile Thr Glu His Ser Trp Asn Ala Asp Leu Tyr Lys  
6945 6950 6955 6960

Leu Met Gly His Phe Ser Trp Trp Thr Ala Phe Val Thr Asn Val Asn  
6965 6970 6975

Ala Ser Ser Ser Glu Ala Phe Leu Ile Gly Ala Asn Tyr Leu Gly Lys  
6980 6985 6990

Pro Lys Glu Gln Ile Asp Gly Tyr Thr Met His Ala Asn Tyr Ile Phe  
6995 7000 7005

Trp Arg Asn Thr Asn Pro Ile Gln Leu Ser Ser Tyr Ser Leu Phe Asp  
7010 7015 7020

Met Ser Lys Phe Pro Leu Lys Leu Arg Gly Thr Ala Val Met Ser Leu  
7025 7030 7035 7040

Lys Glu Asn Gln Ile Asn Asp Met Ile Tyr Ser Leu Leu Glu Lys Gly  
7045 7050 7055

Arg Leu Ile Ile Arg Glu Asn Asn Arg Val Val Val Ser Ser Asp Ile  
7060 7065 7070

Leu Val Asn Asn  
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<222> 4376...4385  
<223> Xaa is any amino acid

<400> 7244  
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Ser Leu Pro Val Leu Gln Val Arg Asp Val Leu Val Arg Gly Phe Gly  
20 25 30

Asp Ser Val Glu Glu Ala Leu Ser Glu Ala Arg Glu His Leu Lys Asn  
35 40 45

Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val Leu Pro Gln Leu  
50 55 60

Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala Leu Ser Thr Asn  
65 70 75 80

His Gly His Lys Val Val Glu Leu Val Ala Glu Met Asp Gly Ile Gln  
85 90 95

Tyr Gly Arg Ser Gly Ile Thr Leu Gly Val Leu Val Pro His Val Gly  
 100 105 110  
 Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg Lys Asn Gly Asn  
 115 120 125  
 Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu Lys Ser Tyr Asp  
 130 135 140  
 Leu Gly Asp Glu Leu Gly Thr Asp Pro Ile Glu Asp Tyr Glu Gln Asn  
 145 150 155 160  
 Trp Asn Thr Lys His Gly Ser Gly Ala Leu Arg Glu Leu Thr Arg Gly  
 165 170 175  
 Leu Asn Gly Gly Ala Val Thr Arg Tyr Val Asp Asn Asn Phe Cys Gly  
 180 185 190  
 Pro Asp Gly Tyr Pro Leu Asp Cys Ile Lys Asp Phe Leu Ala Arg Ala  
 195 200 205  
 Gly Lys Ser Met Cys Thr Leu Ser Glu Gln Leu Asp Tyr Ile Glu Ser  
 210 215 220  
 Lys Arg Gly Val Tyr Cys Cys Arg Asp His Glu His Glu Ile Ala Trp  
 225 230 235 240  
 Phe Thr Glu Arg Ser Asp Lys Ser Tyr Glu His Gln Thr Pro Phe Glu  
 245 250 255  
 Ile Lys Ser Ala Lys Lys Phe Asp Thr Phe Lys Gly Glu Cys Pro Lys  
 260 265 270  
 Phe Val Phe Pro Leu Asn Ser Lys Val Lys Val Ile Gln Pro Arg Val  
 275 280 285  
 Glu Lys Lys Lys Thr Glu Gly Phe Met Gly Arg Ile Arg Ser Val Tyr  
 290 295 300  
 Pro Val Ala Ser Pro Gln Glu Cys Asn Asn Met His Leu Ser Thr Leu  
 305 310 315 320  
 Met Lys Cys Asn His Cys Asp Glu Val Ser Trp Gln Thr Cys Asp Phe  
 325 330 335  
 Leu Lys Ala Thr Cys Glu His Cys Gly Thr Glu Asn Leu Val Ile Glu  
 340 345 350  
 Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met  
 355 360 365  
 Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val  
 370 375 380  
 Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly  
 385 390 395 400  
 Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys  
 405 410 415  
 Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly  
 420 425 430

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Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu  
435 440 445  
Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val  
450 455 460  
Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe  
465 470 475 480  
Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr  
485 490 495  
Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr  
500 505 510  
Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser  
515 520 525  
Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala Ala Gly Val Ile  
530 535 540  
Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pro  
545 550 555 560  
Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln  
565 570 575  
Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser Asp Leu Leu Thr  
580 585 590  
Asn Ser Val Ile Ile Met Ala Tyr Val Thr Gly Gly Leu Val Gln Gln  
595 600 605  
Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr Val Glu Lys Leu  
610 615 620  
Arg Pro Ile Phe Glu Trp Ile Glu Ala Lys Leu Ser Ala Gly Val Glu  
625 630 635 640  
Phe Leu Lys Asp Ala Trp Glu Ile Leu Lys Phe Leu Ile Thr Gly Val  
645 650 655  
Phe Asp Ile Val Lys Gly Gln Ile Gln Val Ala Ser Asp Asn Ile Lys  
660 665 670  
Asp Cys Val Lys Cys Phe Ile Asp Val Val Asn Lys Ala Leu Glu Met  
675 680 685  
Cys Ile Asp Gln Val Thr Ile Ala Gly Ala Lys Leu Arg Ser Leu Asn  
690 695 700  
Leu Gly Glu Val Phe Ile Ala Gln Ser Lys Gly Leu Tyr Arg Gln Cys  
705 710 715 720  
Ile Arg Gly Lys Glu Gln Leu Gln Leu Leu Met Pro Leu Lys Ala Pro  
725 730 735  
Lys Glu Val Thr Phe Leu Glu Gly Asp Ser His Asp Thr Val Leu Thr  
740 745 750  
Ser Glu Glu Val Val Leu Lys Asn Gly Glu Leu Glu Ala Leu Glu Thr  
755 760 765

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Pro Val Asp Ser Phe Thr Asn Gly Ala Ile Val Gly Thr Pro Val Cys  
770 775 780

Val Asn Gly Leu Met Leu Leu Glu Ile Lys Asp Lys Glu Gln Tyr Cys  
785 790 795

Ala Leu Ser Pro Gly Leu Leu Ala Thr Asn Asn Val Phe Arg Leu Lys  
805 810 815

Gly Gly Ala Pro Ile Lys Gly Val Thr Phe Gly Glu Asp Thr Val Trp  
820 825 830

Glu Val Gln Gly Tyr Lys Asn Val Arg Ile Thr Phe Glu Leu Asp Glu  
835 840 845

Arg Val Asp Lys Val Leu Asn Glu Lys Cys Ser Val Tyr Thr Val Glu  
850 855 860

Ser Gly Thr Glu Val Thr Glu Phe Ala Cys Val Val Ala Glu Ala Val  
865 870 875 880

Val Lys Thr Leu Gln Pro Val Ser Asp Leu Leu Thr Asn Met Gly Ile  
885 890 895

Asp Leu Asp Glu Trp Ser Val Ala Thr Phe Tyr Leu Phe Asp Asp Ala  
900 905 910

Gly Glu Glu Asn Phe Ser Ser Arg Met Tyr Cys Ser Phe Tyr Pro Pro  
915 920 925

Asp Glu Glu Glu Glu Asp Asp Ala Glu Cys Glu Glu Glu Glu Ile Asp  
930 935 940

Glu Thr Cys Glu His Glu Tyr Gly Thr Glu Asp Asp Tyr Gln Gly Leu  
945 950 955 960

Pro Leu Glu Phe Gly Ala Ser Ala Glu Thr Val Arg Val Glu Glu Glu  
965 970 975

Glu Glu Glu Asp Trp Leu Asp Asp Thr Thr Glu Gln Ser Glu Ile Glu  
980 985 990

Pro Glu Pro Glu Pro Thr Pro Glu Glu Pro Val Asn Gln Phe Thr Gly  
995 1000 1005

Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Ile Val  
1010 1015 1020

Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala Ala Asn  
1025 1030 1035 1040

Ile His Leu Lys His Gly Gly Gly Val Ala Gly Ala Leu Asn Lys Ala  
1045 1050 1055

Thr Asn Gly Ala Met Gln Lys Glu Ser Asp Asp Tyr Ile Lys Leu Asn  
1060 1065 1070

Gly Pro Leu Thr Val Gly Gly Ser Cys Leu Leu Ser Gly His Asn Leu  
1075 1080 1085

Ala Lys Lys Cys Leu His Val Val Gly Pro Asn Leu Asn Ala Gly Glu  
1090 1095 1100

SEQLIST-20480.TXT

Asp Ile Gln Leu Leu Lys Ala Ala Tyr Glu Asn Phe Asn Ser Gln Asp  
 1105 1110 1115 1120  
 Ile Leu Leu Ala Pro Leu Leu Ser Ala Gly Ile Phe Gly Ala Lys Pro  
 1125 1130 1135  
 Leu Gln Ser Leu Gln Val Cys Val Gln Thr Val Arg Thr Gln Val Tyr  
 1140 1145 1150  
 Ile Ala Val Asn Asp Lys Ala Leu Tyr Glu Gln Val Val Met Asp Tyr  
 1155 1160 1165  
 Leu Asp Asn Leu Lys Pro Arg Val Glu Ala Pro Lys Gln Glu Glu Pro  
 1170 1175 1180  
 Pro Asn Thr Glu Asp Ser Lys Thr Glu Glu Lys Ser Val Val Gln Lys  
 1185 1190 1195 1200  
 Pro Val Asp Val Lys Pro Lys Ile Lys Ala Cys Ile Asp Glu Val Thr  
 1205 1210 1215  
 Thr Thr Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys Leu Leu Leu Phe  
 1220 1225 1230  
 Ala Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln Asn Met Leu Arg  
 1235 1240 1245  
 Gly Glu Asp Met Ser Phe Leu Glu Lys Asp Ala Pro Tyr Met Val Gly  
 1250 1255 1260  
 Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val Ile Pro Ser Lys  
 1265 1270 1275 1280  
 Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala Leu Lys Lys Val  
 1285 1290 1295  
 Pro Val Asp Glu Tyr Ile Thr Thr Tyr Pro Gly Gln Gly Cys Ala Gly  
 1300 1305 1310  
 Tyr Thr Leu Glu Glu Ala Lys Thr Ala Leu Lys Lys Cys Lys Ser Ala  
 1315 1320 1325  
 Phe Tyr Val Leu Pro Ser Glu Ala Pro Asn Ala Lys Glu Glu Ile Leu  
 1330 1335 1340  
 Gly Thr Val Ser Trp Asn Leu Arg Glu Met Leu Ala His Ala Glu Glu  
 1345 1350 1355 1360  
 Thr Arg Lys Leu Met Pro Ile Cys Met Asp Val Arg Ala Ile Met Ala  
 1365 1370 1375  
 Thr Ile Gln Arg Lys Tyr Lys Gly Ile Lys Ile Gln Glu Gly Ile Val  
 1380 1385 1390  
 Asp Tyr Gly Val Arg Phe Phe Phe Tyr Thr Ser Lys Glu Pro Val Ala  
 1395 1400 1405  
 Ser Ile Ile Thr Lys Leu Asn Ser Leu Asn Glu Pro Leu Val Thr Met  
 1410 1415 1420  
 Pro Ile Gly Tyr Val Thr His Gly Phe Asn Leu Glu Glu Ala Ala Arg  
 1425 1430 1435 1440

SEQLIST-20480.TXT

Cys Met Arg Ser Leu Lys Ala Pro Ala Val Val Ser Val Ser Ser Pro  
1445 1450 1455

Asp Ala Val Thr Thr Tyr Asn Gly Tyr Leu Thr Ser Ser Ser Lys Thr  
1460 1465 1470

Ser Glu Glu His Phe Val Glu Thr Val Ser Leu Ala Gly Ser Tyr Arg  
1475 1480 1485

Asp Trp Ser Tyr Ser Gly Gln Arg Thr Glu Leu Gly Val Glu Phe Leu  
1490 1495 1500

Lys Arg Gly Asp Lys Ile Val Tyr His Thr Leu Glu Ser Pro Val Glu  
1505 1510 1515 1520

Phe His Leu Asp Gly Glu Val Leu Ser Leu Asp Lys Leu Lys Ser Leu  
1525 1530 1535

Leu Ser Leu Arg Glu Val Lys Thr Ile Lys Val Phe Thr Thr Val Asp  
1540 1545 1550

Asn Thr Asn Leu His Thr Gln Leu Val Asp Met Ser Met Thr Tyr Gly  
1555 1560 1565

Gln Gln Phe Gly Pro Thr Tyr Leu Asp Gly Ala Asp Val Thr Lys Ile  
1570 1575 1580

Lys Pro His Val Asn His Glu Gly Lys Thr Phe Phe Val Leu Pro Ser  
1585 1590 1595 1600

Asp Asp Thr Leu Arg Ser Glu Ala Phe Glu Tyr Tyr His Thr Leu Asp  
1605 1610 1615

Glu Ser Phe Leu Gly Arg Tyr Met Ser Ala Leu Asn His Thr Lys Lys  
1620 1625 1630

Trp Lys Phe Pro Gln Val Gly Gly Leu Thr Ser Ile Lys Trp Ala Asp  
1635 1640 1645

Asn Asn Cys Tyr Leu Ser Ser Val Leu Leu Ala Leu Gln Gln Leu Glu  
1650 1655 1660

Val Lys Phe Asn Ala Pro Ala Leu Gln Glu Ala Tyr Tyr Arg Ala Arg  
1665 1670 1675 1680

Ala Gly Asp Ala Ala Asn Phe Cys Ala Leu Ile Leu Ala Tyr Ser Asn  
1685 1690 1695

Lys Thr Val Gly Glu Leu Gly Asp Val Arg Glu Thr Met Thr His Leu  
1700 1705 1710

Leu Gln His Ala Asn Leu Glu Ser Ala Lys Arg Val Leu Asn Val Val  
1715 1720 1725

Cys Lys His Cys Gly Gln Lys Thr Thr Thr Leu Thr Gly Val Glu Ala  
1730 1735 1740

Val Met Tyr Met Gly Thr Leu Ser Tyr Asp Asn Leu Lys Thr Gly Val  
1745 1750 1755 1760

Ser Ile Pro Cys Val Cys Gly Arg Asp Ala Thr Gln Tyr Leu Val Gln  
1765 1770 1775



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Gln Glu Ser Ser Phe Val Met Met Ser Ala Pro Pro Ala Glu Tyr Lys  
1780 1785 1790

Leu Gln Gln Gly Thr Phe Leu Cys Ala Asn Glu Tyr Thr Gly Asn Tyr  
1795 1800 1805

Gln Cys Gly His Tyr Thr His Ile Thr Ala Lys Glu Thr Leu Tyr Arg  
1810 1815 1820

Ile Asp Gly Ala His Leu Thr Lys Met Ser Glu Tyr Lys Gly Pro Val  
1825 1830 1835 1840

Thr Asp Val Phe Tyr Lys Glu Thr Ser Tyr Thr Thr Thr Ile Lys Pro  
1845 1850 1855

Val Ser Tyr Lys Leu Asp Gly Val Thr Tyr Thr Glu Ile Glu Pro Lys  
1860 1865 1870

Leu Asp Gly Tyr Tyr Lys Lys Asp Asn Ala Tyr Tyr Thr Glu Gln Pro  
1875 1880 1885

Ile Asp Leu Val Pro Thr Gln Pro Leu Pro Asn Ala Ser Phe Asp Asn  
1890 1895 1900

Phe Lys Leu Thr Cys Ser Asn Thr Lys Phe Ala Asp Asp Leu Asn Gln  
1905 1910 1915 1920

Met Thr Gly Phe Thr Lys Pro Ala Ser Arg Glu Leu Ser Val Thr Phe  
1925 1930 1935

Phe Pro Asp Leu Asn Gly Asp Val Val Ala Ile Asp Tyr Arg His Tyr  
1940 1945 1950

Ser Ala Ser Phe Lys Lys Gly Ala Lys Leu Leu His Lys Pro Ile Val  
1955 1960 1965

Trp His Ile Asn Gln Ala Thr Thr Lys Thr Thr Phe Lys Pro Asn Thr  
1970 1975 1980

Trp Cys Leu Arg Cys Leu Trp Ser Thr Lys Pro Val Asp Thr Ser Asn  
1985 1990 1995 2000

Ser Phe Glu Val Leu Ala Val Glu Asp Thr Gln Gly Met Asp Asn Leu  
2005 2010 2015

Ala Cys Glu Ser Gln Gln Pro Thr Ser Glu Glu Val Val Glu Asn Pro  
2020 2025 2030

Thr Ile Gln Lys Glu Val Ile Glu Cys Asp Val Lys Thr Thr Glu Val  
2035 2040 2045

Val Gly Asn Val Ile Leu Lys Pro Ser Asp Glu Gly Val Lys Val Thr  
2050 2055 2060

Gln Glu Leu Gly His Glu Asp Leu Met Ala Ala Tyr Val Glu Asn Thr  
2065 2070 2075 2080

Ser Ile Thr Ile Lys Lys Pro Asn Glu Leu Ser Leu Ala Leu Gly Leu  
2085 2090 2095

Lys Thr Ile Ala Thr His Gly Ile Ala Ala Ile Asn Ser Val Pro Trp  
2100 2105 2110

SEQLIST-20480.TXT

Ser Lys Ile Leu Ala Tyr Val Lys Pro Phe Leu Gly Gln Ala Ala Ile  
2115 2120 2125

Thr Thr Ser Asn Cys Ala Lys Arg Leu Ala Gln Arg Val Phe Asn Asn  
2130 2135 2140

Tyr Met Pro Tyr Val Phe Thr Leu Leu Phe Gln Leu Cys Thr Phe Thr  
2145 2150 2155 2160

Lys Ser Thr Asn Ser Arg Ile Arg Ala Ser Leu Pro Thr Thr Ile Ala  
2165 2170 2175

Lys Asn Ser Val Lys Ser Val Ala Lys Leu Cys Leu Asp Ala Gly Ile  
2180 2185 2190

Asn Tyr Val Lys Ser Pro Lys Phe Ser Lys Leu Phe Thr Ile Ala Met  
2195 2200 2205

Trp Leu Leu Leu Leu Ser Ile Cys Leu Gly Ser Leu Ile Cys Val Thr  
2210 2215 2220

Ala Ala Phe Gly Val Leu Leu Ser Asn Phe Gly Ala Pro Ser Tyr Cys  
2225 2230 2235 2240

Asn Gly Val Arg Glu Leu Tyr Leu Asn Ser Ser Asn Val Thr Thr Met  
2245 2250 2255

Asp Phe Cys Glu Gly Ser Phe Pro Cys Ser Ile Cys Leu Ser Gly Leu  
2260 2265 2270

Asp Ser Leu Asp Ser Tyr Pro Ala Leu Glu Thr Ile Gln Val Thr Ile  
2275 2280 2285

Ser Ser Tyr Lys Leu Asp Leu Thr Ile Leu Gly Leu Ala Ala Glu Trp  
2290 2295 2300

Val Leu Ala Tyr Met Leu Phe Thr Lys Phe Phe Tyr Leu Leu Gly Leu  
2305 2310 2315 2320

Ser Ala Ile Met Gln Val Phe Phe Gly Tyr Phe Ala Ser His Phe Ile  
2325 2330 2335

Ser Asn Ser Trp Leu Met Trp Phe Ile Ile Ser Ile Val Gln Met Ala  
2340 2345 2350

Pro Val Ser Ala Met Val Arg Met Tyr Ile Phe Phe Ala Ser Phe Tyr  
2355 2360 2365

Tyr Ile Trp Lys Ser Tyr Val His Ile Met Asp Gly Cys Thr Ser Ser  
2370 2375 2380

Thr Cys Met Met Cys Tyr Lys Arg Asn Arg Ala Thr Arg Val Glu Cys  
2385 2390 2395 2400

Thr Thr Ile Val Asn Gly Met Lys Arg Ser Phe Tyr Val Tyr Ala Asn  
2405 2410 2415

Gly Gly Arg Gly Phe Cys Lys Thr His Asn Trp Asn Cys Leu Asn Cys  
2420 2425 2430

Asp Thr Phe Cys Thr Gly Ser Thr Phe Ile Ser Asp Glu Val Ala Arg  
2435 2440 2445

SEQLIST-20480.TXT

Asp Leu Ser Leu Gln Phe Lys Arg Pro Ile Asn Pro Thr Asp Gln Ser  
 2450 2455 2460  
 Ser Tyr Ile Val Asp Ser Val Ala Val Lys Asn Gly Ala Leu His Leu  
 2465 2470 2475 2480  
 Tyr Phe Asp Lys Ala Gly Gln Lys Thr Tyr Glu Arg His Pro Leu Ser  
 2485 2490 2495  
 His Phe Val Asn Leu Asp Asn Leu Arg Ala Asn Asn Thr Lys Gly Ser  
 2500 2505 2510  
 Leu Pro Ile Asn Val Ile Val Phe Asp Gly Lys Ser Lys Cys Asp Glu  
 2515 2520 2525  
 Ser Ala Ser Lys Ser Ala Ser Val Tyr Tyr Ser Gln Leu Met Cys Gln  
 2530 2535 2540  
 Pro Ile Leu Leu Leu Asp Gln Ala Leu Val Ser Asp Val Gly Asp Ser  
 2545 2550 2555 2560  
 Thr Glu Val Ser Val Lys Met Phe Asp Ala Tyr Val Asp Thr Phe Ser  
 2565 2570 2575  
 Ala Thr Phe Ser Val Pro Met Glu Lys Leu Lys Ala Leu Val Ala Thr  
 2580 2585 2590  
 Ala His Ser Glu Leu Ala Lys Gly Val Ala Leu Asp Gly Val Leu Ser  
 2595 2600 2605  
 Thr Phe Val Ser Ala Ala Arg Gln Gly Val Val Asp Thr Asp Val Asp  
 2610 2615 2620  
 Thr Lys Asp Val Ile Glu Cys Leu Lys Leu Ser His His Ser Asp Leu  
 2625 2630 2635 2640  
 Glu Val Thr Gly Asp Ser Cys Asn Asn Phe Met Leu Thr Tyr Asn Lys  
 2645 2650 2655  
 Val Glu Asn Met Thr Pro Arg Asp Leu Gly Ala Cys Ile Asp Cys Asn  
 2660 2665 2670  
 Ala Arg His Ile Asn Ala Gln Val Ala Lys Ser His Asn Val Ser Leu  
 2675 2680 2685  
 Ile Trp Asn Val Lys Asp Tyr Met Ser Leu Ser Glu Gln Leu Arg Lys  
 2690 2695 2700  
 Gln Ile Arg Ser Ala Ala Lys Lys Asn Asn Ile Pro Phe Arg Leu Thr  
 2705 2710 2715 2720  
 Cys Ala Thr Thr Arg Gln Val Val Asn Val Ile Thr Thr Lys Ile Ser  
 2725 2730 2735  
 Leu Lys Gly Gly Lys Ile Val Ser Thr Cys Phe Lys Leu Met Leu Lys  
 2740 2745 2750  
 Ala Thr Leu Leu Cys Val Leu Ala Ala Leu Val Cys Tyr Ile Val Met  
 2755 2760 2765  
 Pro Val His Thr Leu Ser Ile His Asp Gly Tyr Thr Asn Glu Ile Ile  
 2770 2775 2780

SEQLIST-20480.TXT

Gly Tyr Lys Ala Ile Gln Asp Gly Val Thr Arg Asp Ile Ile Ser Thr  
2785 2790 2795 2800  
Asp Asp Cys Phe Ala Asn Lys His Ala Gly Phe Asp Ala Trp Phe Ser  
2805 2810 2815  
Gln Arg Gly Gly Ser Tyr Lys Asn Asp Lys Ser Cys Pro Val Val Ala  
2820 2825 2830  
Ala Ile Ile Thr Arg Glu Ile Gly Phe Ile Val Pro Gly Leu Pro Gly  
2835 2840 2845  
Thr Val Leu Arg Ala Ile Asn Gly Asp Phe Leu His Phe Leu Pro Arg  
2850 2855 2860  
Val Phe Ser Ala Val Gly Asn Ile Cys Tyr Thr Pro Ser Lys Leu Ile  
2865 2870 2875 2880  
Glu Tyr Ser Asp Phe Ala Thr Ser Ala Cys Val Leu Ala Ala Glu Cys  
2885 2890 2895  
Thr Ile Phe Lys Asp Ala Met Gly Lys Pro Val Pro Tyr Cys Tyr Asp  
2900 2905 2910  
Thr Asn Leu Leu Glu Gly Ser Ile Ser Tyr Ser Glu Leu Arg Pro Asp  
2915 2920 2925  
Thr Arg Tyr Val Leu Met Asp Gly Ser Ile Ile Gln Phe Pro Asn Thr  
2930 2935 2940  
Tyr Leu Glu Gly Ser Val Arg Val Val Thr Thr Phe Asp Ala Glu Tyr  
2945 2950 2955 2960  
Cys Arg His Gly Thr Cys Glu Arg Ser Glu Val Gly Ile Cys Leu Ser  
2965 2970 2975  
Thr Ser Gly Arg Trp Val Leu Asn Asn Glu His Tyr Arg Ala Leu Ser  
2980 2985 2990  
Gly Val Phe Cys Gly Val Asp Ala Met Asn Leu Ile Ala Asn Ile Phe  
2995 3000 3005  
Thr Pro Leu Val Gln Pro Val Gly Ala Leu Asp Val Ser Ala Ser Val  
3010 3015 3020  
Val Ala Gly Gly Ile Ile Ala Ile Leu Val Thr Cys Ala Ala Tyr Tyr  
3025 3030 3035 3040  
Phe Met Lys Phe Arg Arg Val Phe Gly Glu Tyr Asn His Val Val Ala  
3045 3050 3055  
Ala Asn Ala Leu Leu Phe Leu Met Ser Phe Thr Ile Leu Cys Leu Val  
3060 3065 3070  
Pro Ala Tyr Ser Phe Leu Pro Gly Val Tyr Ser Val Phe Tyr Leu Tyr  
3075 3080 3085  
Leu Thr Phe Tyr Phe Thr Asn Asp Val Ser Phe Leu Ala His Leu Gln  
3090 3095 3100  
Trp Phe Ala Met Phe Ser Pro Ile Val Pro Phe Trp Ile Thr Ala Ile  
3105 3110 3115 3120

SEQLIST-20480.TXT

Tyr Val Phe Cys Ile Ser Leu Lys His Cys His Trp Phe Phe Asn Asn  
3125 3130 3135

Tyr Leu Arg Lys Arg Val Met Phe Asn Gly Val Thr Phe Ser Thr Phe  
3140 3145 3150

Glu Glu Ala Ala Leu Cys Thr Phe Leu Leu Asn Lys Glu Met Tyr Leu  
3155 3160 3165

Lys Leu Arg Ser Glu Thr Leu Leu Pro Leu Thr Gln Tyr Asn Arg Tyr  
3170 3175 3180

Leu Ala Leu Tyr Asn Lys Tyr Lys Tyr Phe Ser Gly Ala Leu Asp Thr  
3185 3190 3195 3200

Thr Ser Tyr Arg Glu Ala Ala Cys Cys His Leu Ala Lys Ala Leu Asn  
3205 3210 3215

Asp Phe Ser Asn Ser Gly Ala Asp Val Leu Tyr Gln Pro Pro Gln Thr  
3220 3225 3230

Ser Ile Thr Ser Ala Val Leu Gln Ser Gly Phe Arg Lys Met Ala Phe  
3235 3240 3245

Pro Ser Gly Lys Val Glu Gly Cys Met Val Gln Val Thr Cys Gly Thr  
3250 3255 3260

Thr Thr Leu Asn Gly Leu Trp Leu Asp Asp Thr Val Tyr Cys Pro Arg  
3265 3270 3275 3280

His Val Ile Cys Thr Ala Glu Asp Met Leu Asn Pro Asn Tyr Glu Asp  
3285 3290 3295

Leu Leu Ile Arg Lys Ser Asn His Ser Phe Leu Val Gln Ala Gly Asn  
3300 3305 3310

Val Gln Leu Arg Val Ile Gly His Ser Met Gln Asn Cys Leu Leu Arg  
3315 3320 3325

Leu Lys Val Asp Thr Ser Asn Pro Lys Thr Pro Lys Tyr Lys Phe Val  
3330 3335 3340

Arg Ile Gln Pro Gly Gln Thr Phe Ser Val Leu Ala Cys Tyr Asn Gly  
3345 3350 3355 3360

Ser Pro Ser Gly Val Tyr Gln Cys Ala Met Arg Pro Asn His Thr Ile  
3365 3370 3375

Lys Gly Ser Phe Leu Asn Gly Ser Cys Gly Ser Val Gly Phe Asn Ile  
3380 3385 3390

Asp Tyr Asp Cys Val Ser Phe Cys Tyr Met His His Met Glu Leu Pro  
3395 3400 3405

Thr Gly Val His Ala Gly Thr Asp Leu Glu Gly Lys Phe Tyr Gly Pro  
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Phe Val Asp Arg Gln Thr Ala Gln Ala Ala Gly Thr Asp Thr Thr Ile  
3425 3430 3435 3440

Thr Leu Asn Val Leu Ala Trp Leu Tyr Ala Ala Val Ile Asn Gly Asp  
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Arg Trp Phe Leu Asn Arg Phe Thr Thr Thr Leu Asn Asp Phe Asn Leu  
3460 3465 3470

Val Ala Met Lys Tyr Asn Tyr Glu Pro Leu Thr Gln Asp His Val Asp  
3475 3480 3485

Ile Leu Gly Pro Leu Ser Ala Gln Thr Gly Ile Ala Val Leu Asp Met  
3490 3495 3500

Cys Ala Ala Leu Lys Glu Leu Leu Gln Asn Gly Met Asn Gly Arg Thr  
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Ile Leu Gly Ser Thr Ile Leu Glu Asp Glu Phe Thr Pro Phe Asp Val  
3525 3530 3535

Val Arg Gln Cys Ser Gly Val Thr Phe Gln Gly Lys Phe Lys Lys Ile  
3540 3545 3550

Val Lys Gly Thr His His Trp Met Leu Leu Thr Phe Leu Thr Ser Leu  
3555 3560 3565

Leu Ile Leu Val Gln Ser Thr Gln Trp Ser Leu Phe Phe Phe Val Tyr  
3570 3575 3580

Glu Asn Ala Phe Leu Pro Phe Thr Leu Gly Ile Met Ala Ile Ala Ala  
3585 3590 3595 3600

Cys Ala Met Leu Leu Val Lys His Lys His Ala Phe Leu Cys Leu Phe  
3605 3610 3615

Leu Leu Pro Ser Leu Ala Thr Val Ala Tyr Phe Asn Met Val Tyr Met  
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Pro Ala Ser Trp Val Met Arg Ile Met Thr Trp Leu Glu Leu Ala Asp  
3635 3640 3645

Thr Ser Leu Ser Gly Tyr Arg Leu Lys Asp Cys Val Met Tyr Ala Ser  
3650 3655 3660

Ala Leu Val Leu Leu Ile Leu Met Thr Ala Arg Thr Val Tyr Asp Asp  
3665 3670 3675 3680

Ala Ala Arg Arg Val Trp Thr Leu Met Asn Val Ile Thr Leu Val Tyr  
3685 3690 3695

Lys Val Tyr Tyr Gly Asn Ala Leu Asp Gln Ala Ile Ser Met Trp Ala  
3700 3705 3710

Leu Val Ile Ser Val Thr Ser Asn Tyr Ser Gly Val Val Thr Thr Ile  
3715 3720 3725

Met Phe Leu Ala Arg Ala Ile Val Phe Val Cys Val Glu Tyr Tyr Pro  
3730 3735 3740

Leu Leu Phe Ile Thr Gly Asn Thr Leu Gln Cys Ile Met Leu Val Tyr  
3745 3750 3755 3760

Cys Phe Leu Gly Tyr Cys Cys Cys Cys Tyr Phe Gly Leu Phe Cys Leu  
3765 3770 3775

Leu Asn Arg Tyr Phe Arg Leu Thr Leu Gly Val Tyr Asp Tyr Leu Val  
3780 3785 3790

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Ser Thr Gln Glu Phe Arg Tyr Met Asn Ser Gln Gly Leu Leu Pro Pro  
3795 3800 3805

Lys Ser Ser Ile Asp Ala Phe Lys Leu Asn Ile Lys Leu Leu Gly Ile  
3810 3815 3820

Gly Gly Lys Pro Cys Ile Lys Val Ala Thr Val Gln Ser Lys Met Ser  
3825 3830 3835 3840

Asp Val Lys Cys Thr Ser Val Val Leu Leu Ser Val Leu Gln Gln Leu  
3845 3850 3855

Arg Val Glu Ser Ser Ser Lys Leu Trp Ala Gln Cys Val Gln Leu His  
3860 3865 3870

Asn Asp Ile Leu Leu Ala Lys Asp Thr Thr Glu Ala Phe Glu Lys Met  
3875 3880 3885

Val Ser Leu Leu Ser Val Leu Leu Ser Met Gln Gly Ala Val Asp Ile  
3890 3895 3900

Asn Arg Leu Cys Glu Glu Met Leu Asp Asn Arg Ala Thr Leu Gln Ala  
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Ile Ala Ser Glu Phe Ser Ser Leu Pro Ser Tyr Ala Ala Tyr Ala Thr  
3925 3930 3935

Ala Gln Glu Ala Tyr Glu Gln Ala Val Ala Asn Gly Asp Ser Glu Val  
3940 3945 3950

Val Leu Lys Lys Leu Lys Lys Ser Leu Asn Val Ala Lys Ser Glu Phe  
3955 3960 3965

Asp Arg Asp Ala Ala Met Gln Arg Lys Leu Glu Lys Met Ala Asp Gln  
3970 3975 3980

Ala Met Thr Gln Met Tyr Lys Gln Ala Arg Ser Glu Asp Lys Arg Ala  
3985 3990 3995 4000

Lys Val Thr Ser Ala Met Gln Thr Met Leu Phe Thr Met Leu Arg Lys  
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Leu Asp Asn Asp Ala Leu Asn Asn Ile Ile Asn Asn Ala Arg Asp Gly  
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Cys Val Pro Leu Asn Ile Ile Pro Leu Thr Thr Ala Ala Lys Leu Met  
4035 4040 4045

Val Val Val Pro Asp Tyr Gly Thr Tyr Lys Asn Thr Cys Asp Gly Asn  
4050 4055 4060

Thr Phe Thr Tyr Ala Ser Ala Leu Trp Glu Ile Gln Gln Val Val Asp  
4065 4070 4075 4080

Ala Asp Ser Lys Ile Val Gln Leu Ser Glu Ile Asn Met Asp Asn Ser  
4085 4090 4095

Pro Asn Leu Ala Trp Pro Leu Ile Val Thr Ala Leu Arg Ala Asn Ser  
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Ala Val Lys Leu Gln Asn Asn Glu Leu Ser Pro Val Ala Leu Arg Gln  
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Met Ser Cys Ala Ala Gly Thr Thr Gln Thr Ala Cys Thr Asp Asp Asn  
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Ala Leu Ala Tyr Tyr Asn Asn Ser Lys Gly Gly Arg Phe Val Leu Ala  
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Leu Leu Ser Asp His Gln Asp Leu Lys Trp Ala Arg Phe Pro Lys Ser  
4165 4170 4175

Asp Gly Thr Gly Thr Ile Tyr Thr Glu Leu Glu Pro Pro Cys Arg Phe  
4180 4185 4190

Val Thr Asp Thr Pro Lys Gly Pro Lys Val Lys Tyr Leu Tyr Phe Ile  
4195 4200 4205

Lys Gly Leu Asn Asn Leu Asn Arg Gly Met Val Leu Gly Ser Leu Ala  
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Ala Thr Val Arg Leu Gln Ala Gly Asn Ala Thr Glu Val Pro Ala Asn  
4225 4230 4235 4240

Ser Thr Val Leu Ser Phe Cys Ala Phe Ala Val Asp Pro Ala Lys Ala  
4245 4250 4255

Tyr Lys Asp Tyr Leu Ala Ser Gly Gly Gln Pro Ile Thr Asn Cys Val  
4260 4265 4270

Lys Met Leu Cys Thr His Thr Gly Thr Gly Gln Ala Ile Thr Val Thr  
4275 4280 4285

Pro Glu Ala Asn Met Asp Gln Glu Ser Phe Gly Gly Ala Ser Cys Cys  
4290 4295 4300

Leu Tyr Cys Arg Cys His Ile Asp His Pro Asn Pro Lys Gly Phe Cys  
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Asp Leu Lys Gly Lys Tyr Val Gln Ile Pro Thr Thr Cys Ala Asn Asp  
4325 4330 4335

Pro Val Gly Phe Thr Leu Arg Asn Thr Val Cys Thr Val Cys Gly Met  
4340 4345 4350

Trp Lys Gly Tyr Gly Cys Ser Cys Asp Gln Leu Arg Glu Pro Leu Met  
4355 4360 4365

Gln Ser Ala Asp Ala Ser Thr Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
4370 4375 4380

Xaa Gly Val Ser Ala Ala Arg Leu Thr Pro Cys Gly Thr Gly Thr Ser  
4385 4390 4395 4400

Thr Asp Val Val Tyr Arg Ala Phe Asp Ile Tyr Asn Glu Lys Val Ala  
4405 4410 4415

Gly Phe Ala Lys Phe Leu Lys Thr Asn Cys Cys Arg Phe Gln Glu Lys  
4420 4425 4430

Asp Glu Glu Gly Asn Leu Leu Asp Ser Tyr Phe Val Val Lys Arg His  
4435 4440 4445

Thr Met Ser Asn Tyr Gln His Glu Glu Thr Ile Tyr Asn Leu Val Lys  
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 Gly Asp Met Val Pro His Ile Ser Arg Gln Arg Leu Thr Lys Tyr Thr  
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 Met Ala Asp Leu Val Tyr Ala Leu Arg His Phe Asp Glu Gly Asn Cys  
 4500 4505 4510  
 Asp Thr Leu Lys Glu Ile Leu Val Thr Tyr Asn Cys Cys Asp Asp Asp  
 4515 4520 4525  
 Tyr Phe Asn Lys Lys Asp Trp Tyr Asp Phe Val Glu Asn Pro Asp Ile  
 4530 4535 4540  
 Leu Arg Val Tyr Ala Asn Leu Gly Glu Arg Val Arg Gln Ser Leu Leu  
 4545 4550 4555 4560  
 Lys Thr Val Gln Phe Cys Asp Ala Met Arg Asp Ala Gly Ile Val Gly  
 4565 4570 4575  
 Val Leu Thr Leu Asp Asn Gln Asp Leu Asn Gly Asn Trp Tyr Asp Phe  
 4580 4585 4590  
 Gly Asp Phe Val Gln Val Ala Pro Gly Cys Gly Val Pro Ile Val Asp  
 4595 4600 4605  
 Ser Tyr Tyr Ser Leu Leu Met Pro Ile Leu Thr Leu Thr Arg Ala Leu  
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 Ala Ala Glu Ser His Met Asp Ala Asp Leu Ala Lys Pro Leu Ile Lys  
 4625 4630 4635 4640  
 Trp Asp Leu Leu Lys Tyr Asp Phe Thr Glu Glu Arg Leu Cys Leu Phe  
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 Asp Arg Tyr Phe Lys Tyr Trp Asp Gln Thr Tyr His Pro Asn Cys Ile  
 4660 4665 4670  
 Asn Cys Leu Asp Asp Arg Cys Ile Leu His Cys Ala Asn Phe Asn Val  
 4675 4680 4685  
 Leu Phe Ser Thr Val Phe Pro Pro Thr Ser Phe Gly Pro Leu Val Arg  
 4690 4695 4700  
 Lys Ile Phe Val Asp Gly Val Pro Phe Val Val Ser Thr Gly Tyr His  
 4705 4710 4715 4720  
 Phe Arg Glu Leu Gly Val Val His Asn Gln Asp Val Asn Leu His Ser  
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 Ser Arg Leu Ser Phe Lys Glu Leu Leu Val Tyr Ala Ala Asp Pro Ala  
 4740 4745 4750  
 Met His Ala Ala Ser Gly Asn Leu Leu Leu Asp Lys Arg Thr Thr Cys  
 4755 4760 4765  
 Phe Ser Val Ala Ala Leu Thr Asn Asn Val Ala Phe Gln Thr Val Lys  
 4770 4775 4780  
 Pro Gly Asn Phe Asn Lys Asp Phe Tyr Asp Phe Ala Val Ser Lys Gly  
 4785 4790 4795 4800

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Phe Phe Lys Glu Gly Ser Ser Val Glu Leu Lys His Phe Phe Ala  
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Gln Asp Gly Asn Ala Ala Ile Ser Asp Tyr Asp Tyr Tyr Arg Tyr Asn  
4820 4825 4830

Leu Pro Thr Met Cys Asp Ile Arg Gln Leu Leu Phe Val Val Glu Val  
4835 4840 4845

Val Asp Lys Tyr Phe Asp Cys Tyr Asp Gly Gly Cys Ile Asn Ala Asn  
4850 4855 4860

Gln Val Ile Val Asn Asn Leu Asp Lys Ser Ala Gly Phe Pro Phe Asn  
4865 4870 4880

Lys Trp Gly Lys Ala Arg Leu Tyr Tyr Asp Ser Met Ser Tyr Glu Asp  
4885 4890 4895

Gln Asp Ala Leu Phe Ala Tyr Thr Lys Arg Asn Val Ile Pro Thr Ile  
4900 4905 4910

Thr Gln Met Asn Leu Lys Tyr Ala Ile Ser Ala Lys Asn Arg Ala Arg  
4915 4920 4925

Thr Val Ala Gly Val Ser Ile Cys Ser Thr Met Thr Asn Arg Gln Phe  
4930 4935 4940

His Gln Lys Leu Leu Lys Ser Ile Ala Ala Thr Arg Gly Ala Thr Val  
4945 4950 4955 4960

Val Ile Gly Thr Ser Lys Phe Tyr Gly Gly Trp His Asn Met Leu Lys  
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Thr Val Tyr Ser Asp Val Glu Thr Pro His Leu Met Gly Trp Asp Tyr  
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Pro Lys Cys Asp Arg Ala Met Pro Asn Met Leu Arg Ile Met Ala Ser  
4995 5000 5005

Leu Val Leu Ala Arg Lys His Asn Thr Cys Cys Asn Leu Ser His Arg  
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Phe Tyr Arg Leu Ala Asn Glu Cys Ala Gln Val Leu Ser Glu Met Val  
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Met Cys Gly Gly Ser Leu Tyr Val Lys Pro Gly Gly Thr Ser Ser Gly  
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Asp Ala Thr Thr Ala Tyr Ala Asn Ser Val Phe Asn Ile Cys Gln Ala  
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Val Thr Ala Asn Val Asn Ala Leu Leu Ser Thr Asp Gly Asn Lys Ile  
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Ala Asp Lys Tyr Val Arg Asn Leu Gln His Arg Leu Tyr Glu Cys Leu  
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Tyr Arg Asn Arg Asp Val Asp His Glu Phe Val Asp Glu Phe Tyr Ala  
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Tyr Leu Arg Lys His Phe Ser Met Met Ile Leu Ser Asp Asp Ala Val  
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Val Cys Tyr Asn Ser Asn Tyr Ala Ala Gln Gly Leu Val Ala Ser Ile  
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Lys Asn Phe Lys Ala Val Leu Tyr Tyr Gln Asn Asn Val Phe Met Ser  
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Glu Ala Lys Cys Trp Thr Glu Thr Asp Leu Thr Lys Gly Pro His Glu  
5170 5175 5180

Phe Cys Ser Gln His Thr Met Leu Val Lys Gln Gly Asp Asp Tyr Val  
5185 5190 5195 5200

Tyr Leu Pro Tyr Pro Asp Pro Ser Arg Ile Leu Gly Ala Gly Cys Phe  
5205 5210 5215

Val Asp Asp Ile Val Lys Thr Asp Gly Thr Leu Met Ile Glu Arg Phe  
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Val Ser Leu Ala Ile Asp Ala Tyr Pro Leu Thr Lys His Pro Asn Gln  
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Glu Tyr Ala Asp Val Phe His Leu Tyr Leu Gln Tyr Ile Arg Lys Leu  
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His Asp Glu Leu Thr Gly His Met Leu Asp Met Tyr Ser Val Met Leu  
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Thr Asn Asp Asn Thr Ser Arg Tyr Trp Glu Pro Glu Phe Tyr Glu Ala  
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Met Tyr Thr Pro His Thr Val Leu Gln Ala Val Gly Ala Cys Val Leu  
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Cys Asn Ser Gln Thr Ser Leu Arg Cys Gly Ala Cys Ile Arg Arg Pro  
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Phe Leu Cys Cys Lys Cys Cys Tyr Asp His Val Ile Ser Thr Ser His  
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Lys Leu Val Leu Ser Val Asn Pro Tyr Val Cys Asn Ala Pro Gly Cys  
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Asp Val Thr Asp Val Thr Gln Leu Tyr Leu Gly Gly Met Ser Tyr Tyr  
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Cys Lys Ser His Lys Pro Pro Ile Ser Phe Pro Leu Cys Ala Asn Gly  
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Gln Val Phe Gly Leu Tyr Lys Asn Thr Cys Val Gly Ser Asp Asn Val  
5395 5400 5405

Thr Asp Phe Asn Ala Ile Ala Thr Cys Asp Trp Thr Asn Ala Gly Asp  
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Tyr Ile Leu Ala Asn Thr Cys Thr Glu Arg Leu Lys Leu Phe Ala Ala  
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Glu Thr Leu Lys Ala Thr Glu Glu Thr Phe Lys Leu Ser Tyr Gly Ile  
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Ala Thr Val Arg Glu Val Leu Ser Asp Arg Glu Leu His Leu Ser Trp  
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SEQLIST-20480.TXT

Glu Val Gly Lys Pro Arg Pro Pro Leu Asn Arg Asn Tyr Val Phe Thr  
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Gly Tyr Arg Val Thr Lys Asn Ser Lys Val Gln Ile Gly Glu Tyr Thr  
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Phe Glu Lys Gly Asp Tyr Gly Asp Ala Val Val Tyr Arg Gly Thr Thr  
5505 5510 5515 5520

Thr Tyr Lys Leu Asn Val Gly Asp Tyr Phe Val Leu Thr Ser His Thr  
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Val Met Pro Leu Ser Ala Pro Thr Leu Val Pro Gln Glu His Tyr Val  
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Arg Ile Thr Gly Leu Tyr Pro Thr Leu Asn Ile Ser Asp Glu Phe Ser  
5555 5560 5565

Ser Asn Val Ala Asn Tyr Gln Lys Val Gly Met Gln Lys Tyr Ser Thr  
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Leu Gln Gly Pro Pro Gly Thr Gly Lys Ser His Phe Ala Ile Gly Leu  
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Ala Leu Tyr Tyr Pro Ser Ala Arg Ile Val Tyr Thr Ala Cys Ser His  
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Ala Ala Val Asp Ala Leu Cys Glu Lys Ala Leu Lys Tyr Leu Pro Ile  
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Asp Lys Cys Ser Arg Ile Ile Pro Ala Arg Ala Arg Val Glu Cys Phe  
5635 5640 5645

Asp Lys Phe Lys Val Asn Ser Thr Leu Glu Gln Tyr Val Phe Cys Thr  
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Val Asn Ala Leu Pro Glu Thr Thr Ala Asp Ile Val Val Phe Asp Glu  
5665 5670 5675 5680

Ile Ser Met Ala Thr Asn Tyr Asp Leu Ser Val Val Asn Ala Arg Leu  
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Arg Ala Lys His Tyr Val Tyr Ile Gly Asp Pro Ala Gln Leu Pro Ala  
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Pro Arg Thr Leu Leu Thr Lys Gly Thr Leu Glu Pro Glu Tyr Phe Asn  
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Ser Val Cys Arg Leu Met Lys Thr Ile Gly Pro Asp Met Phe Leu Gly  
5730 5735 5740

Thr Cys Arg Arg Cys Pro Ala Glu Ile Val Asp Thr Val Ser Ala Leu  
5745 5750 5755 5760

Val Tyr Asp Asn Lys Leu Lys Ala His Lys Asp Lys Ser Ala Gln Cys  
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Phe Lys Met Phe Tyr Lys Gly Val Ile Thr His Asp Val Ser Ser Ala  
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Ile Asn Arg Pro Gln Ile Gly Val Val Arg Glu Phe Leu Thr Arg Asn  
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Pro Ala Trp Arg Lys Ala Val Phe Ile Ser Pro Tyr Asn Ser Gln Asn  
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Ala Val Ala Ser Lys Ile Leu Gly Leu Pro Thr Gln Thr Val Asp Ser  
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Ser Gln Gly Ser Glu Tyr Asp Tyr Val Ile Phe Thr Gln Thr Thr Glu  
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Thr Ala His Ser Cys Asn Val Asn Arg Phe Asn Val Ala Ile Thr Arg  
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Ala Lys Ile Gly Ile Leu Cys Ile Met Ser Asp Arg Asp Leu Tyr Asp  
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Lys Leu Gln Phe Thr Ser Leu Glu Ile Pro Arg Arg Asn Val Ala Thr  
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Leu Gln Ala Glu Asn Val Thr Gly Leu Phe Lys Asp Cys Ser Lys Ile  
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Ile Thr Gly Leu His Pro Thr Gln Ala Pro Thr His Leu Ser Val Asp  
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Ile Lys Phe Lys Thr Glu Gly Leu Cys Val Asp Ile Pro Gly Ile Pro  
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Lys Asp Met Thr Tyr Arg Arg Leu Ile Ser Met Met Gly Phe Lys Met  
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Asn Tyr Gln Val Asn Gly Tyr Pro Asn Met Phe Ile Thr Arg Glu Glu  
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Ala Ile Arg His Val Arg Ala Trp Ile Gly Phe Asp Val Glu Gly Cys  
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Phe Ser Thr Gly Val Asn Leu Val Ala Val Pro Thr Gly Tyr Val Asp  
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Gly Asp Gln Phe Lys His Leu Ile Pro Leu Met Tyr Lys Gly Leu Pro  
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Trp Asn Val Val Arg Ile Lys Ile Val Gln Met Leu Ser Asp Thr Leu  
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Lys Gly Leu Ser Asp Arg Val Val Phe Val Leu Trp Ala His Gly Phe  
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Glu Leu Thr Ser Met Lys Tyr Phe Val Lys Ile Gly Pro Glu Arg Thr  
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Val Lys Arg Val Asp Trp Ser Val Glu Tyr Pro Ile Ile Gly Asp Glu  
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Leu Arg Val Asn Ser Ala Cys Arg Lys Val Gln His Met Val Val Lys  
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Ser Ala Leu Leu Ala Asp Lys Phe Pro Val Leu His Asp Ile Gly Asn  
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Tyr Asp Ala Gln Pro Cys Ser Asp Lys Ala Tyr Lys Ile Glu Glu Leu  
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Cys Arg Phe Asp Thr Arg Val Leu Ser Asn Leu Asn Leu Pro Gly Cys  
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Gln Ser Leu Glu Asn Val Ala Tyr Asn Val Val Asn Lys Gly His Phe  
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Tyr Thr Lys Val Asp Gly Ile Asp Val Glu Ile Phe Glu Asn Lys Thr  
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Arg Tyr Lys Leu Glu Gly Tyr Ala Phe Glu His Ile Val Tyr Gly Asp  
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Lys Arg Ser Gln Asp Ser Pro Leu Lys Leu Glu Asp Phe Ile Pro Met  
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Asp Ser Thr Val Lys Asn Tyr Phe Ile Thr Asp Ala Gln Thr Gly Ser  
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Leu Glu Lys Cys Asp Leu Gln Asn Tyr Gly Glu Asn Ala Val Ile Pro  
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Leu Asn Thr Leu Thr Leu Ala Val Pro Tyr Asn Met Arg Val Ile His  
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Asp Phe Val Ser Asp Ala Tyr Ser Thr Leu Ile Gly Asp Cys Ala Thr  
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Pro Arg Thr Lys His Val Thr Lys Glu Asn Asp Ser Lys Glu Gly Phe  
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Ser Ile Ala Val Lys Ile Thr Glu His Ser Trp Asn Ala Asp Leu Tyr  
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Lys Leu Met Gly His Phe Ser Trp Trp Thr Ala Phe Val Thr Asn Val  
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Lys Pro Lys Glu Gln Ile Asp Gly Tyr Thr Met His Ala Asn Tyr Ile  
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Asp Met Ser Lys Phe Pro Leu Lys Leu Arg Gly Thr Ala Val Met Ser  
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Asp Ser Val Glu Glu Ala Leu Ser Glu Ala Arg Glu His Leu Lys Asn  
35 40 45

Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val Leu Pro Gln Leu  
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Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala Leu Ser Thr Asn  
65 70 75 80

His Gly His Lys Val Val Glu Leu Val Ala Glu Met Asp Gly Ile Gln  
85 90 95

Tyr Gly Arg Ser Gly Ile Thr Leu Gly Val Leu Val Pro His Val Gly  
100 105 110

Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg Lys Asn Gly Asn  
115 120 125

Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu Lys Ser Tyr Asp  
130 135 140

Leu Gly Asp Glu Leu Gly Thr Asp Pro Ile Glu Asp Tyr Glu Gln Asn  
145 150 155 160

Trp Asn Thr Lys His Gly Ser Gly Ala Leu Arg Glu Leu Thr Arg Glu  
165 170 175

Leu Asn Gly Gly Ala Val Thr Arg Tyr Val Asp Asn Asn Phe Cys Gly  
180 185 190

Pro Asp Gly Tyr Pro Leu Asp Cys Ile Lys Asp Phe Leu Ala Arg Ala  
195 200 205

Gly Lys Ser Met Cys Thr Leu Ser Glu Gln Leu Asp Tyr Ile Glu Ser  
210 215 220

SEQLIST-20480.TXT

Lys Arg Gly Val Tyr Cys Cys Arg Asp His Glu His Glu Ile Ala Trp  
 225 230 235 240  
 Phe Thr Glu Arg Ser Asp Lys Ser Tyr Glu His Gln Thr Pro Phe Glu  
 245 250 255  
 Ile Lys Ser Ala Lys Lys Phe Asp Thr Phe Lys Gly Glu Cys Pro Lys  
 260 265 270  
 Phe Val Phe Pro Leu Asn Ser Lys Val Lys Val Ile Gln Pro Arg Val  
 275 280 285  
 Glu Lys Lys Lys Thr Glu Gly Phe Met Gly Arg Ile Arg Ser Val Tyr  
 290 295 300  
 Pro Val Ala Ser Pro Gln Glu Cys Asn Asn Met His Leu Ser Thr Leu  
 305 310 315 320  
 Met Lys Cys Asn His Cys Asp Glu Val Ser Trp Gln Thr Cys Asp Phe  
 325 330 335  
 Leu Lys Ala Thr Cys Glu His Cys Gly Thr Glu Asn Leu Val Ile Glu  
 340 345 350  
 Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met  
 355 360 365  
 Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val  
 370 375 380  
 Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly  
 385 390 395 400  
 Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys  
 405 410 415  
 Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly  
 420 425 430  
 Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu  
 435 440 445  
 Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val  
 450 455 460  
 Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe  
 465 470 475 480  
 Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr  
 485 490 495  
 Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr  
 500 505 510  
 Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser  
 515 520 525  
 Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala Ala Gly Val Ile  
 530 535 540  
 Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pro  
 545 550 555 560

SEQLIST-20480.TXT

Asp Leu Gln Arg Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln  
 565 570 575  
 Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser Asp Leu Leu Thr  
 580 585 590  
 Asn Ser Val Ile Ile Met Ala Tyr Val Thr Gly Gly Leu Val Gln Gln  
 595 600 605  
 Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr Val Glu Lys Leu  
 610 615 620  
 Arg Pro Ile Phe Glu Trp Ile Glu Ala Lys Leu Ser Ala Gly Val Glu  
 625 630 635 640  
 Phe Leu Lys Asp Ala Trp Glu Ile Leu Lys Phe Leu Ile Thr Gly Val  
 645 650 655  
 Phe Asp Ile Val Lys Gly Gln Ile Gln Val Ala Ser Asp Asn Ile Lys  
 660 665 670  
 Asp Cys Val Lys Cys Phe Ile Asp Val Val Asn Lys Ala Leu Glu Met  
 675 680 685  
 Cys Ile Asp Gln Val Thr Ile Ala Gly Ala Lys Leu Arg Ser Leu Asn  
 690 695 700  
 Leu Gly Glu Val Phe Ile Ala Gln Ser Lys Gly Leu Tyr Arg Gln Cys  
 705 710 715 720  
 Ile Arg Gly Lys Glu Gln Leu Gln Leu Leu Met Pro Leu Lys Ala Pro  
 725 730 735  
 Lys Glu Val Thr Phe Leu Glu Gly Asp Ser His Asp Thr Val Leu Thr  
 740 745 750  
 Ser Glu Glu Val Val Leu Lys Asn Gly Glu Leu Glu Ala Leu Glu Thr  
 755 760 765  
 Pro Val Asp Ser Phe Thr Asn Gly Ala Ile Val Gly Thr Pro Val Cys  
 770 775 780  
 Val Asn Gly Leu Met Leu Leu Glu Ile Lys Asp Lys Glu Gln Tyr Cys  
 785 790 795 800  
 Ala Leu Ser Pro Gly Leu Leu Ala Thr Asn Asn Val Phe Arg Leu Lys  
 805 810 815  
 Gly Gly Ala Pro Ile Lys Gly Val Thr Phe Gly Glu Asp Thr Val Trp  
 820 825 830  
 Glu Val Gln Gly Tyr Lys Asn Val Arg Ile Thr Phe Glu Leu Asp Glu  
 835 840 845  
 Arg Val Asp Lys Val Leu Asn Glu Lys Cys Ser Val Tyr Thr Val Glu  
 850 855 860  
 Ser Gly Thr Glu Val Thr Glu Phe Ala Cys Val Val Ala Glu Ala Val  
 865 870 875 880  
 Val Lys Thr Leu Gln Pro Val Ser Asp Leu Leu Thr Asn Met Gly Ile  
 885 890 895

SEQLIST-20480.TXT

Asp Leu Asp Glu Trp Ser Val Ala Thr Phe Tyr Leu Phe Asp Asp Ala  
900 905 910  
Gly Glu Glu Asn Phe Ser Ser Arg Met Tyr Cys Ser Phe Tyr Pro Pro  
915 920 925  
Asp Glu Glu Glu Glu Asp Asp Ala Glu Cys Glu Glu Glu Glu Ile Asp  
930 935 940  
Glu Thr Cys Glu His Glu Tyr Gly Thr Glu Asp Asp Tyr Gln Gly Leu  
945 950 955 960  
Pro Leu Glu Phe Gly Ala Ser Ala Glu Thr Val Arg Val Glu Glu Glu  
965 970 975  
Glu Glu Glu Asp Trp Leu Asp Asp Thr Thr Glu Gln Ser Glu Ile Glu  
980 985 990  
Pro Glu Pro Glu Pro Thr Pro Glu Glu Pro Val Asn Gln Phe Thr Gly  
995 1000 1005  
Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Ile Val  
1010 1015 1020  
Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala Ala Asn  
1025 1030 1035 1040  
Ile His Leu Lys His Gly Gly Gly Val Ala Gly Ala Leu Asn Lys Ala  
1045 1050 1055  
Thr Asn Gly Ala Met Gln Lys Glu Ser Asp Asp Tyr Ile Lys Leu Asn  
1060 1065 1070  
Gly Pro Leu Thr Val Gly Gly Ser Cys Leu Leu Ser Gly His Asn Leu  
1075 1080 1085  
Ala Lys Lys Cys Leu His Val Val Gly Pro Asn Leu Asn Ala Gly Glu  
1090 1095 1100  
Asp Ile Gln Leu Leu Lys Ala Ala Tyr Glu Asn Phe Asn Ser Gln Asp  
1105 1110 1115 1120  
Ile Leu Leu Ala Pro Leu Leu Ser Ala Gly Ile Phe Gly Ala Lys Pro  
1125 1130 1135  
Leu Gln Ser Leu Gln Val Cys Val Gln Thr Val Arg Thr Gln Val Tyr  
1140 1145 1150  
Ile Ala Val Asn Asp Lys Ala Leu Tyr Glu Gln Val Val Met Asp Tyr  
1155 1160 1165  
Leu Asp Asn Leu Lys Pro Arg Val Glu Ala Pro Lys Gln Glu Glu Pro  
1170 1175 1180  
Pro Asn Thr Glu Asp Ser Lys Thr Glu Glu Lys Ser Val Val Gln Lys  
1185 1190 1195 1200  
Pro Val Asp Val Lys Pro Lys Ile Lys Ala Cys Ile Asp Glu Val Thr  
1205 1210 1215  
Thr Thr Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys Leu Leu Leu Phe  
1220 1225 1230

SEQLIST-20480.TXT

Ala Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln Asn Met Leu Arg  
1235 1240 1245

Gly Glu Asp Met Ser Phe Leu Glu Lys Asp Ala Pro Tyr Met Val Gly  
1250 1255 1260

Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val Ile Pro Ser Lys  
1265 1270 1275 1280

Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala Leu Lys Lys Val  
1285 1290 1295

Pro Val Asp Glu Tyr Ile Thr Thr Tyr Pro Gly Gln Gly Cys Ala Gly  
1300 1305 1310

Tyr Thr Leu Glu Glu Ala Lys Thr Ala Leu Lys Lys Cys Lys Ser Ala  
1315 1320 1325

Phe Tyr Val Leu Pro Ser Glu Ala Pro Asn Ala Lys Glu Glu Ile Leu  
1330 1335 1340

Gly Thr Val Ser Trp Asn Leu Arg Glu Met Leu Ala His Ala Glu Glu  
1345 1350 1355 1360

Thr Arg Lys Leu Met Pro Ile Cys Met Asp Val Arg Ala Ile Met Ala  
1365 1370 1375

Thr Ile Gln Arg Lys Tyr Lys Gly Ile Lys Ile Gln Glu Gly Ile Val  
1380 1385 1390

Asp Tyr Gly Val Arg Phe Phe Phe Tyr Thr Ser Lys Glu Pro Val Ala  
1395 1400 1405

Ser Ile Ile Thr Lys Leu Asn Ser Leu Asn Glu Pro Leu Val Thr Met  
1410 1415 1420

Pro Ile Gly Tyr Val Thr His Gly Phe Asn Leu Glu Glu Ala Ala Arg  
1425 1430 1435 1440

Cys Met Arg Ser Leu Lys Ala Pro Ala Val Val Ser Val Ser Ser Pro  
1445 1450 1455

Asp Ala Val Thr Thr Tyr Asn Gly Tyr Leu Thr Ser Ser Ser Lys Thr  
1460 1465 1470

Ser Glu Glu His Phe Val Glu Thr Val Ser Leu Ala Gly Ser Tyr Arg  
1475 1480 1485

Asp Trp Ser Tyr Ser Gly Gln Arg Thr Glu Leu Gly Val Glu Phe Leu  
1490 1495 1500

Lys Arg Gly Asp Lys Ile Val Tyr His Thr Leu Glu Ser Pro Val Glu  
1505 1510 1515 1520

Phe His Leu Asp Gly Glu Val Leu Ser Leu Asp Lys Leu Lys Ser Leu  
1525 1530 1535

Leu Ser Leu Arg Glu Val Lys Thr Ile Lys Val Phe Thr Thr Val Asp  
1540 1545 1550

Asn Thr Asn Leu His Thr Gln Leu Val Asp Met Ser Met Thr Tyr Gly  
1555 1560 1565

SEQLIST-20480.TXT

Gln Gln Phe Gly Pro Thr Tyr Leu Asp Gly Ala Asp Val Thr Lys Ile  
1570 1575 1580

Lys Pro His Val Asn His Glu Gly Lys Thr Phe Phe Val Leu Pro Ser  
1585 1590 1600

Asp Asp Thr Leu Arg Ser Glu Ala Phe Glu Tyr Tyr His Thr Leu Asp  
1605 1610 1615

Glu Ser Phe Leu Gly Arg Tyr Met Ser Ala Leu Asn His Thr Lys Lys  
1620 1625 1630

Trp Lys Phe Pro Gln Val Gly Gly Leu Thr Ser Ile Lys Trp Ala Asp  
1635 1640 1645

Asn Asn Cys Tyr Leu Ser Ser Val Leu Leu Ala Leu Gln Gln Leu Glu  
1650 1655 1660

Val Lys Phe Asn Ala Pro Ala Leu Gln Glu Ala Tyr Tyr Arg Ala Arg  
1665 1670 1675 1680

Ala Gly Asp Ala Ala Asn Phe Cys Ala Leu Ile Leu Ala Tyr Ser Asn  
1685 1690 1695

Lys Thr Val Gly Glu Leu Gly Asp Val Arg Glu Thr Met Thr His Leu  
1700 1705 1710

Leu Gln His Ala Asn Leu Glu Ser Ala Lys Arg Val Leu Asn Val Val  
1715 1720 1725

Cys Lys His Cys Gly Gln Lys Thr Thr Thr Leu Thr Gly Val Glu Ala  
1730 1735 1740

Val Met Tyr Met Gly Thr Leu Ser Tyr Asp Asn Leu Lys Thr Gly Val  
1745 1750 1755 1760

Ser Ile Pro Cys Val Cys Gly Arg Asp Ala Thr Gln Tyr Leu Val Gln  
1765 1770 1775

Gln Glu Ser Ser Phe Val Met Met Ser Ala Pro Pro Ala Glu Tyr Lys  
1780 1785 1790

Leu Gln Gln Gly Thr Phe Leu Cys Ala Asn Glu Tyr Thr Gly Asn Tyr  
1795 1800 1805

Gln Cys Gly His Tyr Thr His Ile Thr Ala Lys Glu Thr Leu Tyr Arg  
1810 1815 1820

Ile Asp Gly Ala His Leu Thr Lys Met Ser Glu Tyr Lys Gly Pro Val  
1825 1830 1835 1840

Thr Asp Val Phe Tyr Lys Glu Thr Ser Tyr Thr Thr Thr Ile Lys Pro  
1845 1850 1855

Val Ser Tyr Lys Leu Asp Gly Val Thr Tyr Thr Glu Ile Glu Pro Lys  
1860 1865 1870

Leu Asp Gly Tyr Tyr Lys Lys Asp Asn Ala Tyr Tyr Thr Glu Gln Pro  
1875 1880 1885

Ile Asp Leu Val Pro Thr Gln Pro Leu Pro Asn Ala Ser Phe Asp Asn  
1890 1895 1900

SEQLIST-20480.TXT

Phe Lys Leu Thr Cys Ser Asn Thr Lys Phe Ala Asp Asp Leu Asn Gln  
 1905 1910 1915 1920  
 Met Thr Gly Phe Thr Lys Pro Ala Ser Arg Glu Leu Ser Val Thr Phe  
 1925 1930 1935  
 Phe Pro Asp Leu Asn Gly Asp Val Val Ala Ile Asp Tyr Arg His Tyr  
 1940 1945 1950  
 Ser Ala Ser Phe Lys Lys Gly Ala Lys Leu Leu His Lys Pro Ile Val  
 1955 1960 1965  
 Trp His Ile Asn Gln Ala Thr Thr Lys Thr Thr Phe Lys Pro Asn Thr  
 1970 1975 1980  
 Trp Cys Leu Arg Cys Leu Trp Ser Thr Lys Pro Val Asp Thr Ser Asn  
 1985 1990 1995 2000  
 Ser Phe Glu Val Leu Ala Val Glu Asp Thr Gln Gly Met Asp Asn Leu  
 2005 2010 2015  
 Ala Cys Glu Ser Gln Gln Pro Thr Ser Glu Glu Val Val Glu Asn Pro  
 2020 2025 2030  
 Thr Ile Gln Lys Glu Val Ile Glu Cys Asp Val Lys Thr Thr Glu Val  
 2035 2040 2045  
 Val Gly Asn Val Ile Leu Lys Pro Ser Asp Glu Gly Val Lys Val Thr  
 2050 2055 2060  
 Gln Glu Leu Gly His Glu Asp Leu Met Ala Ala Tyr Val Glu Asn Thr  
 2065 2070 2075 2080  
 Ser Ile Thr Ile Lys Lys Pro Asn Glu Leu Ser Leu Ala Leu Gly Leu  
 2085 2090 2095  
 Lys Thr Ile Ala Thr His Gly Ile Ala Ala Ile Asn Ser Val Pro Trp  
 2100 2105 2110  
 Ser Lys Ile Leu Ala Tyr Val Lys Pro Phe Leu Gly Gln Ala Ala Ile  
 2115 2120 2125  
 Thr Thr Ser Asn Cys Ala Lys Arg Leu Ala Gln Arg Val Phe Asn Asn  
 2130 2135 2140  
 Tyr Met Pro Tyr Val Phe Thr Leu Leu Phe Gln Leu Cys Thr Phe Thr  
 2145 2150 2155 2160  
 Lys Ser Thr Asn Ser Arg Ile Arg Ala Ser Leu Pro Thr Thr Ile Ala  
 2165 2170 2175  
 Lys Asn Ser Val Lys Ser Val Ala Lys Leu Cys Leu Asp Ala Gly Ile  
 2180 2185 2190  
 Asn Tyr Val Lys Ser Pro Lys Phe Ser Lys Leu Phe Thr Ile Ala Met  
 2195 2200 2205  
 Trp Leu Leu Leu Leu Ser Ile Cys Leu Gly Ser Leu Ile Cys Val Thr  
 2210 2215 2220  
 Ala Ala Phe Gly Val Leu Leu Ser Asn Phe Gly Ala Pro Ser Tyr Cys  
 2225 2230 2235 2240

SEQLIST-20480.TXT

Asn Gly Val Arg Glu Leu Tyr Leu Asn Ser Ser Asn Val Thr Thr Met  
2245 2250 2255

Asp Phe Cys Glu Gly Ser Phe Pro Cys Ser Ile Cys Leu Ser Gly Leu  
2260 2265 2270

Asp Ser Leu Asp Ser Tyr Pro Ala Leu Glu Thr Ile Gln Val Thr Ile  
2275 2280 2285

Ser Ser Tyr Lys Leu Asp Leu Thr Ile Leu Gly Leu Ala Ala Glu Trp  
2290 2295 2300

Val Leu Ala Tyr Met Leu Phe Thr Lys Phe Phe Tyr Leu Leu Gly Leu  
2305 2310 2315 2320

Ser Ala Ile Met Gln Val Phe Phe Gly Tyr Phe Ala Ser His Phe Ile  
2325 2330 2335

Ser Asn Ser Trp Leu Met Trp Phe Ile Ile Ser Ile Val Gln Met Ala  
2340 2345 2350

Pro Val Ser Ala Met Val Arg Met Tyr Ile Phe Phe Ala Ser Phe Tyr  
2355 2360 2365

Tyr Ile Trp Lys Ser Tyr Val His Ile Met Asp Gly Cys Thr Ser Ser  
2370 2375 2380

Thr Cys Met Met Cys Tyr Lys Arg Asn Arg Ala Thr Arg Val Glu Cys  
2385 2390 2395 2400

Thr Thr Ile Val Asn Gly Met Lys Arg Ser Phe Tyr Val Tyr Ala Asn  
2405 2410 2415

Gly Gly Arg Gly Phe Cys Lys Thr His Asn Trp Asn Cys Leu Asn Cys  
2420 2425 2430

Asp Thr Phe Cys Thr Gly Ser Thr Phe Ile Ser Asp Glu Val Ala Arg  
2435 2440 2445

Asp Leu Ser Leu Gln Phe Lys Arg Pro Ile Asn Pro Thr Asp Gln Ser  
2450 2455 2460

Ser Tyr Ile Val Asp Ser Val Ala Val Lys Asn Gly Ala Leu His Leu  
2465 2470 2475 2480

Tyr Phe Asp Lys Ala Gly Gln Lys Thr Tyr Glu Arg His Pro Leu Ser  
2485 2490 2495

His Phe Val Asn Leu Asp Asn Leu Arg Ala Asn Asn Thr Lys Gly Ser  
2500 2505 2510

Leu Pro Ile Asn Val Ile Val Phe Asp Gly Lys Ser Lys Cys Asp Glu  
2515 2520 2525

Ser Ala Ser Lys Ser Ala Ser Val Tyr Tyr Ser Gln Leu Met Cys Gln  
2530 2535 2540

Pro Ile Leu Leu Leu Asp Gln Ala Leu Val Ser Asp Val Gly Asp Ser  
2545 2550 2555 2560

Thr Glu Val Ser Val Lys Met Phe Asp Ala Tyr Val Asp Thr Phe Ser  
2565 2570 2575



SEQLIST-20480.TXT

Ala Thr Phe Ser Val Pro Met Glu Lys Leu Lys Ala Leu Val Ala Thr  
2580 2585 2590

Ala His Ser Glu Leu Ala Lys Gly Val Ala Leu Asp Gly Val Leu Ser  
2595 2600 2605

Thr Phe Val Ser Ala Ala Arg Gln Gly Val Val Asp Thr Asp Val Asp  
2610 2615 2620

Thr Lys Asp Val Ile Glu Cys Leu Lys Leu Ser His His Ser Asp Leu  
2625 2630 2635 2640

Glu Val Thr Gly Asp Ser Cys Asn Asn Phe Met Leu Thr Tyr Asn Lys  
2645 2650 2655

Val Glu Asn Met Thr Pro Arg Asp Leu Gly Ala Cys Ile Asp Cys Asn  
2660 2665 2670

Ala Arg His Ile Asn Ala Gln Val Ala Lys Ser His Asn Val Ser Leu  
2675 2680 2685

Ile Trp Asn Val Lys Asp Tyr Met Ser Leu Ser Glu Gln Leu Arg Lys  
2690 2695 2700

Gln Ile Arg Ser Ala Ala Lys Lys Asn Asn Ile Pro Phe Arg Leu Thr  
2705 2710 2715 2720

Cys Ala Thr Thr Arg Gln Val Val Asn Val Ile Thr Thr Lys Ile Ser  
2725 2730 2735

Leu Lys Gly Gly Lys Ile Val Ser Thr Cys Phe Lys Leu Met Leu Lys  
2740 2745 2750

Ala Thr Leu Leu Cys Val Leu Ala Ala Leu Val Cys Tyr Ile Val Met  
2755 2760 2765

Pro Val His Thr Leu Ser Ile His Asp Gly Tyr Thr Asn Glu Ile Ile  
2770 2775 2780

Gly Tyr Lys Ala Ile Gln Asp Gly Val Thr Arg Asp Ile Ile Ser Thr  
2785 2790 2795 2800

Asp Asp Cys Phe Ala Asn Lys His Ala Gly Phe Asp Ala Trp Phe Ser  
2805 2810 2815

Gln Arg Gly Gly Ser Tyr Lys Asn Asp Lys Ser Cys Pro Val Val Ala  
2820 2825 2830

Ala Ile Ile Thr Arg Glu Ile Gly Phe Ile Val Pro Gly Leu Pro Gly  
2835 2840 2845

Thr Val Leu Arg Ala Ile Asn Gly Asp Phe Leu His Phe Leu Pro Arg  
2850 2855 2860

Val Phe Ser Ala Val Gly Asn Ile Cys Tyr Thr Pro Ser Lys Leu Ile  
2865 2870 2875 2880

Glu Tyr Ser Asp Phe Ala Thr Ser Ala Cys Val Leu Ala Ala Glu Cys  
2885 2890 2895

Thr Ile Phe Lys Asp Ala Met Gly Lys Pro Val Pro Tyr Cys Tyr Asp  
2900 2905 2910

SEQLIST-20480.TXT

Thr Asn Leu Leu Glu Gly Ser Ile Ser Tyr Ser Glu Leu Arg Pro Asp  
2915 2920 2925

Thr Arg Tyr Val Leu Met Asp Gly Ser Ile Ile Gln Phe Pro Asn Thr  
2930 2935 2940

Tyr Leu Glu Gly Ser Val Arg Val Val Thr Thr Phe Asp Ala Glu Tyr  
2945 2950 2955 2960

Cys Arg His Gly Thr Cys Glu Arg Ser Glu Val Gly Ile Cys Leu Ser  
2965 2970 2975

Thr Ser Gly Arg Trp Val Leu Asn Asn Glu His Tyr Arg Ala Leu Ser  
2980 2985 2990

Gly Val Phe Cys Gly Val Asp Ala Met Asn Leu Ile Ala Asn Ile Phe  
2995 3000 3005

Thr Pro Leu Val Gln Pro Val Gly Ala Leu Asp Val Ser Ala Ser Val  
3010 3015 3020

Val Ala Gly Gly Ile Ile Ala Ile Leu Val Thr Cys Ala Ala Tyr Tyr  
3025 3030 3035 3040

Phe Met Lys Phe Arg Arg Val Phe Gly Glu Tyr Asn His Val Val Ala  
3045 3050 3055

Ala Asn Ala Leu Leu Phe Leu Met Ser Phe Thr Ile Leu Cys Leu Val  
3060 3065 3070

Pro Ala Tyr Ser Phe Leu Pro Gly Val Tyr Ser Val Phe Tyr Leu Tyr  
3075 3080 3085

Leu Thr Phe Tyr Phe Thr Asn Asp Val Ser Phe Leu Ala His Leu Gln  
3090 3095 3100

Trp Phe Ala Met Phe Ser Pro Ile Val Pro Phe Trp Ile Thr Ala Ile  
3105 3110 3115 3120

Tyr Val Phe Cys Ile Ser Leu Lys His Cys His Trp Phe Phe Asn Asn  
3125 3130 3135

Tyr Leu Arg Lys Arg Val Met Phe Asn Gly Val Thr Phe Ser Thr Phe  
3140 3145 3150

Glu Glu Ala Ala Leu Cys Thr Phe Leu Leu Asn Lys Glu Met Tyr Leu  
3155 3160 3165

Lys Leu Arg Ser Glu Thr Leu Leu Pro Leu Thr Gln Tyr Asn Arg Tyr  
3170 3175 3180

Leu Ala Leu Tyr Asn Lys Tyr Lys Tyr Phe Ser Gly Ala Leu Asp Thr  
3185 3190 3195 3200

Thr Ser Tyr Arg Glu Ala Ala Cys Cys His Leu Ala Lys Ala Leu Asn  
3205 3210 3215

Asp Phe Ser Asn Ser Gly Ala Asp Val Leu Tyr Gln Pro Pro Gln Thr  
3220 3225 3230

Ser Ile Thr Ser Ala Val Leu Gln Ser Gly Phe Arg Lys Met Ala Phe  
3235 3240 3245

SEQLIST-20480.TXT

Pro Ser Gly Lys Val Glu Gly Cys Met Val Gln Val Thr Cys Gly Thr  
3250 3255 3260

Thr Thr Leu Asn Gly Leu Trp Leu Asp Asp Thr Val Tyr Cys Pro Arg  
3265 3270 3275 3280

His Val Ile Cys Thr Ala Glu Asp Met Leu Asn Pro Asn Tyr Glu Asp  
3285 3290 3295

Leu Leu Ile Arg Lys Ser Asn His Ser Phe Leu Val Gln Ala Gly Asn  
3300 3305 3310

Val Gln Leu Arg Val Ile Gly His Ser Met Gln Asn Cys Leu Leu Arg  
3315 3320 3325

Leu Lys Val Asp Thr Ser Asn Pro Lys Thr Pro Lys Tyr Lys Phe Val  
3330 3335 3340

Arg Ile Gln Pro Gly Gln Thr Phe Ser Val Leu Ala Cys Tyr Asn Gly  
3345 3350 3355 3360

Ser Pro Ser Gly Val Tyr Gln Cys Ala Met Arg Pro Asn His Thr Ile  
3365 3370 3375

Lys Gly Ser Phe Leu Asn Gly Ser Cys Gly Ser Val Gly Phe Asn Ile  
3380 3385 3390

Asp Tyr Asp Cys Val Ser Phe Cys Tyr Met His His Met Glu Leu Pro  
3395 3400 3405

Thr Gly Val His Ala Gly Thr Asp Leu Glu Gly Lys Phe Tyr Gly Pro  
3410 3415 3420

Phe Val Asp Arg Gln Thr Ala Gln Ala Ala Gly Thr Asp Thr Thr Ile  
3425 3430 3435 3440

Thr Leu Asn Val Leu Ala Trp Leu Tyr Ala Ala Val Ile Asn Gly Asp  
3445 3450 3455

Arg Trp Phe Leu Asn Arg Phe Thr Thr Thr Leu Asn Asp Phe Asn Leu  
3460 3465 3470

Val Ala Met Lys Tyr Asn Tyr Glu Pro Leu Thr Gln Asp His Val Asp  
3475 3480 3485

Ile Leu Gly Pro Leu Ser Ala Gln Thr Gly Ile Ala Val Leu Asp Met  
3490 3495 3500

Cys Ala Ala Leu Lys Glu Leu Leu Gln Asn Gly Met Asn Gly Arg Thr  
3505 3510 3515 3520

Ile Leu Gly Ser Thr Ile Leu Glu Asp Glu Phe Thr Pro Phe Asp Val  
3525 3530 3535

Val Arg Gln Cys Ser Gly Val Thr Phe Gln Gly Lys Phe Lys Lys Ile  
3540 3545 3550

Val Lys Gly Thr His His Trp Met Leu Leu Thr Phe Leu Thr Ser Leu  
3555 3560 3565

Leu Ile Leu Val Gln Ser Thr Gln Trp Ser Leu Phe Phe Phe Val Tyr  
3570 3575 3580

SEQLIST-20480.TXT

Glu Asn Ala Phe Leu Pro Phe Thr Leu Gly Ile Met Ala Ile Ala Ala  
 3585 3590 3595 3600  
 Cys Ala Met Leu Leu Val Lys His Lys His Ala Phe Leu Cys Leu Phe  
 3605 3610 3615  
 Leu Leu Pro Ser Leu Ala Thr Val Ala Tyr Phe Asn Met Val Tyr Met  
 3620 3625 3630  
 Pro Ala Ser Trp Val Met Arg Ile Met Thr Trp Leu Glu Leu Ala Asp  
 3635 3640 3645  
 Thr Ser Leu Ser Gly Tyr Arg Leu Lys Asp Cys Val Met Tyr Ala Ser  
 3650 3655 3660  
 Ala Leu Val Leu Leu Ile Leu Met Thr Ala Arg Thr Val Tyr Asp Asp  
 3665 3670 3675 3680  
 Ala Ala Arg Arg Val Trp Thr Leu Met Asn Val Ile Thr Leu Val Tyr  
 3685 3690 3695  
 Lys Val Tyr Tyr Gly Asn Ala Leu Asp Gln Ala Ile Ser Met Trp Ala  
 3700 3705 3710  
 Leu Val Ile Ser Val Thr Ser Asn Tyr Ser Gly Val Val Thr Thr Ile  
 3715 3720 3725  
 Met Phe Leu Ala Arg Ala Ile Val Phe Val Cys Val Glu Tyr Tyr Pro  
 3730 3735 3740  
 Leu Leu Phe Ile Thr Gly Asn Thr Leu Gln Cys Ile Met Leu Val Tyr  
 3745 3750 3755 3760  
 Cys Phe Leu Gly Tyr Cys Cys Cys Cys Tyr Phe Gly Leu Phe Cys Leu  
 3765 3770 3775  
 Leu Asn Arg Tyr Phe Arg Leu Thr Leu Gly Val Tyr Asp Tyr Leu Val  
 3780 3785 3790  
 Ser Thr Gln Glu Phe Arg Tyr Met Asn Ser Gln Gly Leu Leu Pro Pro  
 3795 3800 3805  
 Lys Ser Ser Ile Asp Ala Phe Lys Leu Asn Ile Lys Leu Leu Gly Ile  
 3810 3815 3820  
 Gly Gly Lys Pro Cys Ile Lys Val Ala Thr Val Gln Ser Lys Met Ser  
 3825 3830 3835 3840  
 Asp Val Lys Cys Thr Ser Val Val Leu Leu Ser Val Leu Gln Gln Leu  
 3845 3850 3855  
 Arg Val Glu Ser Ser Ser Lys Leu Trp Ala Gln Cys Val Gln Leu His  
 3860 3865 3870  
 Asn Asp Ile Leu Leu Ala Lys Asp Thr Thr Glu Ala Phe Glu Lys Met  
 3875 3880 3885  
 Val Ser Leu Leu Ser Val Leu Leu Ser Met Gln Gly Ala Val Asp Ile  
 3890 3895 3900  
 Asn Arg Leu Cys Glu Glu Met Leu Asp Asn Arg Ala Thr Leu Gln Ala  
 3905 3910 3915 3920

SEQLIST-20480.TXT

Ile Ala Ser Glu Phe Ser Ser Leu Pro Ser Tyr Ala Ala Tyr Ala Thr  
3925 3930 3935

Ala Gln Glu Ala Tyr Glu Gln Ala Val Ala Asn Gly Asp Ser Glu Val  
3940 3945 3950

Val Leu Lys Lys Leu Lys Lys Ser Leu Asn Val Ala Lys Ser Glu Phe  
3955 3960 3965

Asp Arg Asp Ala Ala Met Gln Arg Lys Leu Glu Lys Met Ala Asp Gln  
3970 3975 3980

Ala Met Thr Gln Met Tyr Lys Gln Ala Arg Ser Glu Asp Lys Arg Ala  
3985 3990 4000

Lys Val Thr Ser Ala Met Gln Thr Met Leu Phe Thr Met Leu Arg Lys  
4005 4010 4015

Leu Asp Asn Asp Ala Leu Asn Asn Ile Ile Asn Asn Ala Arg Asp Gly  
4020 4025 4030

Cys Val Pro Leu Asn Ile Ile Pro Leu Thr Thr Ala Ala Lys Leu Met  
4035 4040 4045

Val Val Val Pro Asp Tyr Gly Thr Tyr Lys Asn Thr Cys Asp Gly Asn  
4050 4055 4060

Thr Phe Thr Tyr Ala Ser Ala Leu Trp Glu Ile Gln Gln Val Val Asp  
4065 4070 4075 4080

Ala Asp Ser Lys Ile Val Gln Leu Ser Glu Ile Asn Met Asp Asn Ser  
4085 4090 4095

Pro Asn Leu Ala Trp Pro Leu Ile Val Thr Ala Leu Arg Ala Asn Ser  
4100 4105 4110

Ala Val Lys Leu Gln Asn Asn Glu Leu Ser Pro Val Ala Leu Arg Gln  
4115 4120 4125

Met Ser Cys Ala Ala Gly Thr Thr Gln Thr Ala Cys Thr Asp Asp Asn  
4130 4135 4140

Ala Leu Ala Tyr Tyr Asn Asn Ser Lys Gly Gly Arg Phe Val Leu Ala  
4145 4150 4155 4160

Leu Leu Ser Asp His Gln Asp Leu Lys Trp Ala Arg Phe Pro Lys Ser  
4165 4170 4175

Asp Gly Thr Gly Thr Ile Tyr Thr Glu Leu Glu Pro Pro Cys Arg Phe  
4180 4185 4190

Val Thr Asp Thr Pro Lys Gly Pro Lys Val Lys Tyr Leu Tyr Phe Ile  
4195 4200 4205

Lys Gly Leu Asn Asn Leu Asn Arg Gly Met Val Leu Gly Ser Leu Ala  
4210 4215 4220

Ala Thr Val Arg Leu Gln Ala Gly Asn Ala Thr Glu Val Pro Ala Asn  
4225 4230 4235 4240

Ser Thr Val Leu Ser Phe Cys Ala Phe Ala Val Asp Pro Ala Lys Ala  
4245 4250 4255

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Tyr Lys Asp Tyr Leu Ala Ser Gly Gly Gln Pro Ile Thr Asn Cys Val  
 4260 4265 4270  
 Lys Met Leu Cys Thr His Thr Gly Thr Gly Gln Ala Ile Thr Val Thr  
 4275 4280 4285  
 Pro Glu Ala Asn Met Asp Gln Glu Ser Phe Gly Gly Ala Ser Cys Cys  
 4290 4295 4300  
 Leu Tyr Cys Arg Cys His Ile Asp His Pro Asn Pro Lys Gly Phe Cys  
 4305 4310 4315 4320  
 Asp Leu Lys Gly Lys Tyr Val Gln Ile Pro Thr Thr Cys Ala Asn Asp  
 4325 4330 4335  
 Pro Val Gly Phe Thr Leu Arg Asn Thr Val Cys Thr Val Cys Gly Met  
 4340 4345 4350  
 Trp Lys Gly Tyr Gly Cys Ser Cys Asp Gln Leu Arg Glu Pro Leu Met  
 4355 4360 4365  
 Gln Ser Ala Asp Ala Ser Thr Phe Gly Val Ser Ala Ala Arg Leu Thr  
 4370 4375 4380  
 Pro Cys Gly Thr Gly Thr Ser Thr Asp Val Val Tyr Arg Ala Phe Asp  
 4385 4390 4395 4400  
 Ile Tyr Asn Glu Lys Val Ala Gly Phe Ala Lys Phe Leu Lys Thr Asn  
 4405 4410 4415  
 Cys Cys Arg Phe Gln Glu Lys Asp Glu Glu Gly Asn Leu Leu Asp Ser  
 4420 4425 4430  
 Tyr Phe Val Val Lys Arg His Thr Met Ser Asn Tyr Gln His Glu Glu  
 4435 4440 4445  
 Thr Ile Tyr Asn Leu Val Lys Asp Cys Pro Ala Val Ala Val His Asp  
 4450 4455 4460  
 Phe Phe Lys Phe Arg Val Asp Gly Asp Met Val Pro His Ile Ser Arg  
 4465 4470 4475 4480  
 Gln Arg Leu Thr Lys Tyr Thr Met Ala Asp Leu Val Tyr Ala Leu Arg  
 4485 4490 4495  
 His Phe Asp Glu Gly Asn Cys Asp Thr Leu Lys Glu Ile Leu Val Thr  
 4500 4505 4510  
 Tyr Asn Cys Cys Asp Asp Asp Tyr Phe Asn Lys Lys Asp Trp Tyr Asp  
 4515 4520 4525  
 Phe Val Glu Asn Pro Asp Ile Leu Arg Val Tyr Ala Asn Leu Gly Glu  
 4530 4535 4540  
 Arg Val Arg Gln Ser Leu Leu Lys Thr Val Gln Phe Cys Asp Ala Met  
 4545 4550 4555 4560  
 Arg Asp Ala Gly Ile Val Gly Val Leu Thr Leu Asp Asn Gln Asp Leu  
 4565 4570 4575  
 Asn Gly Asn Trp Tyr Asp Phe Gly Asp Phe Val Gln Val Ala Pro Gly  
 4580 4585 4590

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Cys Gly Val Pro Ile Val Asp Ser Tyr Tyr Ser Leu Leu Met Pro Ile  
4595 4600 4605

Leu Thr Leu Thr Arg Ala Leu Ala Ala Glu Ser His Met Asp Ala Asp  
4610 4615 4620

Leu Ala Lys Pro Leu Ile Lys Trp Asp Leu Leu Lys Tyr Asp Phe Thr  
4625 4630 4635 4640

Glu Glu Arg Leu Cys Leu Phe Asp Arg Tyr Phe Lys Tyr Trp Asp Gln  
4645 4650 4655

Thr Tyr His Pro Asn Cys Ile Asn Cys Leu Asp Asp Arg Cys Ile Leu  
4660 4665 4670

His Cys Ala Asn Phe Asn Val Leu Phe Ser Thr Val Phe Pro Pro Thr  
4675 4680 4685

Ser Phe Gly Pro Leu Val Arg Lys Ile Phe Val Asp Gly Val Pro Phe  
4690 4695 4700

Val Val Ser Thr Gly Tyr His Phe Arg Glu Leu Gly Val Val His Asn  
4705 4710 4715 4720

Gln Asp Val Asn Leu His Ser Ser Arg Leu Ser Phe Lys Glu Leu Leu  
4725 4730 4735

Val Tyr Ala Ala Asp Pro Ala Met His Ala Ala Ser Gly Asn Leu Leu  
4740 4745 4750

Leu Asp Lys Arg Thr Thr Cys Phe Ser Val Ala Ala Leu Thr Asn Asn  
4755 4760 4765

Val Ala Phe Gln Thr Val Lys Pro Gly Asn Phe Asn Lys Asp Phe Tyr  
4770 4775 4780

Asp Phe Ala Val Ser Lys Gly Phe Phe Lys Glu Gly Ser Ser Val Glu  
4785 4790 4795 4800

Leu Lys His Phe Phe Phe Ala Gln Asp Gly Asn Ala Ala Ile Ser Asp  
4805 4810 4815

Tyr Asp Tyr Tyr Arg Tyr Asn Leu Pro Thr Met Cys Asp Ile Arg Gln  
4820 4825 4830

Leu Leu Phe Val Val Glu Val Val Asp Lys Tyr Phe Asp Cys Tyr Asp  
4835 4840 4845

Gly Gly Cys Ile Asn Ala Asn Gln Val Ile Val Asn Asn Leu Asp Lys  
4850 4855 4860

Ser Ala Gly Phe Pro Phe Asn Lys Trp Gly Lys Ala Arg Leu Tyr Tyr  
4865 4870 4875 4880

Asp Ser Met Ser Tyr Glu Asp Gln Asp Ala Leu Phe Ala Tyr Thr Lys  
4885 4890 4895

Arg Asn Val Ile Pro Thr Ile Thr Gln Met Asn Leu Lys Tyr Ala Ile  
4900 4905 4910

Ser Ala Lys Asn Arg Ala Arg Thr Val Ala Gly Val Ser Ile Cys Ser  
4915 4920 4925

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Thr Met Thr Asn Arg Gln Phe His Gln Lys Leu Leu Lys Ser Ile Ala  
4930 4935 4940

Ala Thr Arg Gly Ala Thr Val Val Ile Gly Thr Ser Lys Phe Tyr Gly  
4945 4950 4955 4960

Gly Trp His Asn Met Leu Lys Thr Val Tyr Ser Asp Val Glu Thr Pro  
4965 4970 4975

His Leu Met Gly Trp Asp Tyr Pro Lys Cys Asp Arg Ala Met Pro Asn  
4980 4985 4990

Met Leu Arg Ile Met Ala Ser Leu Val Leu Ala Arg Lys His Asn Thr  
4995 5000 5005

Cys Cys Asn Leu Ser His Arg Phe Tyr Arg Leu Ala Asn Glu Cys Ala  
5010 5015 5020

Gln Val Leu Ser Glu Met Val Met Cys Gly Gly Ser Leu Tyr Val Lys  
5025 5030 5035 5040

Pro Gly Gly Thr Ser Ser Gly Asp Ala Thr Thr Ala Tyr Ala Asn Ser  
5045 5050 5055

Val Phe Asn Ile Cys Gln Ala Val Thr Ala Asn Val Asn Ala Leu Leu  
5060 5065 5070

Ser Thr Asp Gly Asn Lys Ile Ala Asp Lys Tyr Val Arg Asn Leu Gln  
5075 5080 5085

His Arg Leu Tyr Glu Cys Leu Tyr Arg Asn Arg Asp Val Asp His Glu  
5090 5095 5100

Phe Val Asp Glu Phe Tyr Ala Tyr Leu Arg Lys His Phe Ser Met Met  
5105 5110 5115 5120

Ile Leu Ser Asp Asp Ala Val Val Cys Tyr Asn Ser Asn Tyr Ala Ala  
5125 5130 5135

Gln Gly Leu Val Ala Ser Ile Lys Asn Phe Lys Ala Val Leu Tyr Tyr  
5140 5145 5150

Gln Asn Asn Val Phe Met Ser Glu Ala Lys Cys Trp Thr Glu Thr Asp  
5155 5160 5165

Leu Thr Lys Gly Pro His Glu Phe Cys Ser Gln His Thr Met Leu Val  
5170 5175 5180

Lys Gln Gly Asp Asp Tyr Val Tyr Leu Pro Tyr Pro Asp Pro Ser Arg  
5185 5190 5195 5200

Ile Leu Gly Ala Gly Cys Phe Val Asp Asp Ile Val Lys Thr Asp Gly  
5205 5210 5215

Thr Leu Met Ile Glu Arg Phe Val Ser Leu Ala Ile Asp Ala Tyr Pro  
5220 5225 5230

Leu Thr Lys His Pro Asn Gln Glu Tyr Ala Asp Val Phe His Leu Tyr  
5235 5240 5245

Leu Gln Tyr Ile Arg Lys Leu His Asp Glu Leu Thr Gly His Met Leu  
5250 5255 5260



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Asp Met Tyr Ser Val Met Leu Thr Asn Asp Asn Thr Ser Arg Tyr Trp  
 5265 5270 5275 5280  
 Glu Pro Glu Phe Tyr Glu Ala Met Tyr Thr Pro His Thr Val Leu Gln  
 5285 5290 5295  
 Ala Val Gly Ala Cys Val Leu Cys Asn Ser Gln Thr Ser Leu Arg Cys  
 5300 5305 5310  
 Gly Ala Cys Ile Arg Arg Pro Phe Leu Cys Cys Lys Cys Cys Tyr Asp  
 5315 5320 5325  
 His Val Ile Ser Thr Ser His Lys Leu Val Leu Ser Val Asn Pro Tyr  
 5330 5335 5340  
 Val Cys Asn Ala Pro Gly Cys Asp Val Thr Asp Val Thr Gln Leu Tyr  
 5345 5350 5355 5360  
 Leu Gly Gly Met Ser Tyr Tyr Cys Lys Ser His Lys Pro Pro Ile Ser  
 5365 5370 5375  
 Phe Pro Leu Cys Ala Asn Gly Gln Val Phe Gly Leu Tyr Lys Asn Thr  
 5380 5385 5390  
 Cys Val Gly Ser Asp Asn Val Thr Asp Phe Asn Ala Ile Ala Thr Cys  
 5395 5400 5405  
 Asp Trp Thr Asn Ala Gly Asp Tyr Ile Leu Ala Asn Thr Cys Thr Glu  
 5410 5415 5420  
 Arg Leu Lys Leu Phe Ala Ala Glu Thr Leu Lys Ala Thr Glu Glu Thr  
 5425 5430 5435 5440  
 Phe Lys Leu Ser Tyr Gly Ile Ala Thr Val Arg Glu Val Leu Ser Asp  
 5445 5450 5455  
 Arg Glu Leu His Leu Ser Trp Glu Val Gly Lys Pro Arg Pro Pro Leu  
 5460 5465 5470  
 Asn Arg Asn Tyr Val Phe Thr Gly Tyr Arg Val Thr Lys Asn Ser Lys  
 5475 5480 5485  
 Val Gln Ile Gly Glu Tyr Thr Phe Glu Lys Gly Asp Tyr Gly Asp Ala  
 5490 5495 5500  
 Val Val Tyr Arg Gly Thr Thr Thr Tyr Lys Leu Asn Val Gly Asp Tyr  
 5505 5510 5515 5520  
 Phe Val Leu Thr Ser His Thr Val Met Pro Leu Ser Ala Pro Thr Leu  
 5525 5530 5535  
 Val Pro Gln Glu His Tyr Val Arg Ile Thr Gly Leu Tyr Pro Thr Leu  
 5540 5545 5550  
 Asn Ile Ser Asp Glu Phe Ser Ser Asn Val Ala Asn Tyr Gln Lys Val  
 5555 5560 5565  
 Gly Met Gln Lys Tyr Ser Thr Leu Gln Gly Pro Pro Gly Thr Gly Lys  
 5570 5575 5580  
 Ser His Phe Ala Ile Gly Leu Ala Leu Tyr Tyr Pro Ser Ala Arg Ile  
 5585 5590 5595 5600

SEQLIST-20480.TXT

Val Tyr Thr Ala Cys Ser His Ala Ala Val Asp Ala Leu Cys Glu Lys  
5605 5610 5615

Ala Leu Lys Tyr Leu Pro Ile Asp Lys Cys Ser Arg Ile Ile Pro Ala  
5620 5625 5630

Arg Ala Arg Val Glu Cys Phe Asp Lys Phe Lys Val Asn Ser Thr Leu  
5635 5640 5645

Glu Gln Tyr Val Phe Cys Thr Val Asn Ala Leu Pro Glu Thr Thr Ala  
5650 5655 5660

Asp Ile Val Val Phe Asp Glu Ile Ser Met Ala Thr Asn Tyr Asp Leu  
5665 5670 5675 5680

Ser Val Val Asn Ala Arg Leu Arg Ala Lys His Tyr Val Tyr Ile Gly  
5685 5690 5695

Asp Pro Ala Gln Leu Pro Ala Pro Arg Thr Leu Leu Thr Lys Gly Thr  
5700 5705 5710

Leu Glu Pro Glu Tyr Phe Asn Ser Val Cys Arg Leu Met Lys Thr Ile  
5715 5720 5725

Gly Pro Asp Met Phe Leu Gly Thr Cys Arg Arg Cys Pro Ala Glu Ile  
5730 5735 5740

Val Asp Thr Val Ser Ala Leu Val Tyr Asp Asn Lys Leu Lys Ala His  
5745 5750 5755 5760

Lys Asp Lys Ser Ala Gln Cys Phe Lys Met Phe Tyr Lys Gly Val Ile  
5765 5770 5775

Thr His Asp Val Ser Ser Ala Ile Asn Arg Pro Gln Ile Gly Val Val  
5780 5785 5790

Arg Glu Phe Leu Thr Arg Asn Pro Ala Trp Arg Lys Ala Val Phe Ile  
5795 5800 5805

Ser Pro Tyr Asn Ser Gln Asn Ala Val Ala Ser Lys Ile Leu Gly Leu  
5810 5815 5820

Pro Thr Gln Thr Val Asp Ser Ser Gln Gly Ser Glu Tyr Asp Tyr Val  
5825 5830 5835 5840

Ile Phe Thr Gln Thr Thr Glu Thr Ala His Ser Cys Asn Val Asn Arg  
5845 5850 5855

Phe Asn Val Ala Ile Thr Arg Ala Lys Ile Gly Ile Leu Cys Ile Met  
5860 5865 5870

Ser Asp Arg Asp Leu Tyr Asp Lys Leu Gln Phe Thr Ser Leu Glu Ile  
5875 5880 5885

Pro Arg Arg Asn Val Ala Thr Leu Gln Ala Glu Asn Val Thr Gly Leu  
5890 5895 5900

Phe Lys Asp Cys Ser Lys Ile Ile Thr Gly Leu His Pro Thr Gln Ala  
5905 5910 5915 5920

Pro Thr His Leu Ser Val Asp Ile Lys Phe Lys Thr Glu Gly Leu Cys  
5925 5930 5935

SEQLIST-20480.TXT

Val Asp Ile Pro Gly Ile Pro Lys Asp Met Thr Tyr Arg Arg Leu Ile  
5940 5945 5950

Ser Met Met Gly Phe Lys Met Asn Tyr Gln Val Asn Gly Tyr Pro Asn  
5955 5960 5965

Met Phe Ile Thr Arg Glu Glu Ala Ile Arg His Val Arg Ala Trp Ile  
5970 5975 5980

Gly Phe Asp Val Glu Gly Cys His Ala Thr Arg Asp Ala Val Gly Thr  
5985 5990 6000

Asn Leu Pro Leu Gln Leu Gly Phe Ser Thr Gly Val Asn Leu Val Ala  
6005 6010 6015

Val Pro Thr Gly Tyr Val Asp Thr Glu Asn Asn Thr Glu Phe Thr Arg  
6020 6025 6030

Val Asn Ala Lys Pro Pro Pro Gly Asp Gln Phe Lys His Leu Ile Pro  
6035 6040 6045

Leu Met Tyr Lys Gly Leu Pro Trp Asn Val Val Arg Ile Lys Ile Val  
6050 6055 6060

Gln Met Leu Ser Asp Thr Leu Lys Gly Leu Ser Asp Arg Val Val Phe  
6065 6070 6075 6080

Val Leu Trp Ala His Gly Phe Glu Leu Thr Ser Met Lys Tyr Phe Val  
6085 6090 6095

Lys Ile Gly Pro Glu Arg Thr Cys Cys Leu Cys Asp Lys Arg Ala Thr  
6100 6105 6110

Cys Phe Ser Thr Ser Ser Asp Thr Tyr Ala Cys Trp Asn His Ser Val  
6115 6120 6125

Gly Phe Asp Tyr Val Tyr Asn Pro Phe Met Ile Asp Val Gln Gln Trp  
6130 6135 6140

Gly Phe Thr Gly Asn Leu Gln Ser Asn His Asp Gln His Cys Gln Val  
6145 6150 6155 6160

His Gly Asn Ala His Val Ala Ser Cys Asp Ala Ile Met Thr Arg Cys  
6165 6170 6175

Leu Ala Val His Glu Cys Phe Val Lys Arg Val Asp Trp Ser Val Glu  
6180 6185 6190

Tyr Pro Ile Ile Gly Asp Glu Leu Arg Val Asn Ser Ala Cys Arg Lys  
6195 6200 6205

Val Gln His Met Val Val Lys Ser Ala Leu Leu Ala Asp Lys Phe Pro  
6210 6215 6220

Val Leu His Asp Ile Gly Asn Pro Lys Ala Ile Lys Cys Val Pro Gln  
6225 6230 6235 6240

Ala Glu Val Glu Trp Lys Phe Tyr Asp Ala Gln Pro Cys Ser Asp Lys  
6245 6250 6255

Ala Tyr Lys Ile Glu Glu Leu Phe Tyr Ser Tyr Ala Thr His His Asp  
6260 6265 6270

SEQLIST-20480.TXT

Lys Phe Thr Asp Gly Val Cys Leu Phe Trp Asn Cys Asn Val Asp Arg  
 6275 6280 6285  
 Tyr Pro Ala Asn Ala Ile Val Cys Arg Phe Asp Thr Arg Val Leu Ser  
 6290 6295 6300  
 Asn Leu Asn Leu Pro Gly Cys Asp Gly Gly Ser Leu Tyr Val Asn Lys  
 6305 6310 6315 6320  
 His Ala Phe His Thr Pro Ala Phe Asp Lys Ser Ala Phe Thr Asn Leu  
 6325 6330 6335  
 Lys Gln Leu Pro Phe Phe Tyr Tyr Ser Asp Ser Pro Cys Glu Ser His  
 6340 6345 6350  
 Gly Lys Gln Val Val Ser Asp Ile Asp Tyr Val Pro Leu Lys Ser Ala  
 6355 6360 6365  
 Thr Cys Ile Thr Arg Cys Asn Leu Gly Gly Ala Val Cys Arg His His  
 6370 6375 6380  
 Ala Asn Glu Tyr Arg Gln Tyr Leu Asp Ala Tyr Asn Met Met Ile Ser  
 6385 6390 6395 6400  
 Ala Gly Phe Ser Leu Trp Ile Tyr Lys Gln Phe Asp Thr Tyr Asn Leu  
 6405 6410 6415  
 Trp Asn Thr Phe Thr Arg Leu Gln Ser Leu Glu Asn Val Ala Tyr Asn  
 6420 6425 6430  
 Val Val Asn Lys Gly His Phe Asp Gly His Ala Gly Glu Ala Pro Val  
 6435 6440 6445  
 Ser Ile Ile Asn Asn Ala Val Tyr Thr Lys Val Asp Gly Ile Asp Val  
 6450 6455 6460  
 Glu Ile Phe Glu Asn Lys Thr Thr Leu Pro Val Asn Val Ala Phe Glu  
 6465 6470 6475 6480  
 Leu Trp Ala Lys Arg Asn Ile Lys Pro Val Pro Glu Ile Lys Ile Leu  
 6485 6490 6495  
 Asn Asn Leu Gly Val Asp Ile Ala Ala Asn Thr Val Ile Trp Asp Tyr  
 6500 6505 6510  
 Lys Arg Glu Ala Pro Ala His Val Ser Thr Ile Gly Val Cys Thr Met  
 6515 6520 6525  
 Thr Asp Ile Ala Lys Lys Pro Thr Glu Ser Ala Cys Ser Ser Leu Thr  
 6530 6535 6540  
 Val Leu Phe Asp Gly Arg Val Glu Gly Gln Val Asp Leu Phe Arg Asn  
 6545 6550 6555 6560  
 Ala Arg Asn Gly Val Leu Ile Thr Glu Gly Ser Val Lys Gly Leu Thr  
 6565 6570 6575  
 Pro Ser Lys Gly Pro Ala Gln Ala Ser Val Asn Gly Val Thr Leu Ile  
 6580 6585 6590  
 Gly Glu Ser Val Lys Thr Gln Phe Asn Tyr Phe Lys Lys Val Asp Gly  
 6595 6600 6605

SEQLIST-20480.TXT

Ile Ile Gln Gln Leu Pro Glu Thr Tyr Phe Thr Gln Ser Arg Asp Leu  
6610 6615 6620

Glu Asp Phe Lys Pro Arg Ser Gln Met Glu Thr Asp Phe Leu Glu Leu  
6625 6630 6635 6640

Ala Met Asp Glu Phe Ile Gln Arg Tyr Lys Leu Glu Gly Tyr Ala Phe  
6645 6650 6655

Glu His Ile Val Tyr Gly Asp Phe Ser His Gly Gln Leu Gly Gly Leu  
6660 6665 6670

His Leu Met Ile Gly Leu Ala Lys Arg Ser Gln Asp Ser Pro Leu Lys  
6675 6680 6685

Leu Glu Asp Phe Ile Pro Met Asp Ser Thr Val Lys Asn Tyr Phe Ile  
6690 6695 6700

Thr Asp Ala Gln Thr Gly Ser Ser Lys Cys Val Cys Ser Val Ile Asp  
6705 6710 6715 6720

Leu Leu Leu Asp Asp Phe Val Glu Ile Ile Lys Ser Gln Asp Leu Ser  
6725 6730 6735

Val Ile Ser Lys Val Val Lys Val Thr Ile Asp Tyr Ala Glu Ile Ser  
6740 6745 6750

Phe Met Leu Trp Cys Lys Asp Gly His Val Glu Thr Phe Tyr Pro Lys  
6755 6760 6765

Leu Gln Ala Ser Arg Ala Trp Gln Pro Gly Val Ala Met Pro Asn Leu  
6770 6775 6780

Tyr Lys Met Gln Arg Met Leu Leu Glu Lys Cys Asp Leu Gln Asn Tyr  
6785 6790 6795 6800

Gly Glu Asn Ala Val Ile Pro Lys Gly Ile Met Met Asn Val Ala Lys  
6805 6810 6815

Tyr Thr Gln Leu Cys Gln Tyr Leu Asn Thr Leu Thr Leu Ala Val Pro  
6820 6825 6830

Tyr Asn Met Arg Val Ile His Phe Gly Ala Gly Ser Asp Lys Gly Val  
6835 6840 6845

Ala Pro Gly Thr Ala Val Leu Arg Gln Trp Leu Pro Thr Gly Thr Leu  
6850 6855 6860

Leu Val Asp Ser Asp Leu Asn Asp Phe Val Ser Asp Ala Tyr Ser Thr  
6865 6870 6875 6880

Leu Ile Gly Asp Cys Ala Thr Val His Thr Ala Asn Lys Trp Asp Leu  
6885 6890 6895

Ile Ile Ser Asp Met Tyr Asp Pro Arg Thr Lys His Val Thr Lys Glu  
6900 6905 6910

Asn Asp Ser Lys Glu Gly Phe Phe Thr Tyr Leu Cys Gly Phe Ile Lys  
6915 6920 6925

Gln Lys Leu Ala Leu Gly Gly Ser Ile Ala Val Lys Ile Thr Glu His  
6930 6935 6940

SEQLIST-20480.TXT

Ser Trp Asn Ala Asp Leu Tyr Lys Leu Met Gly His Phe Ser Trp Trp  
6945 6950 6955 6960

Thr Ala Phe Val Thr Asn Val Asn Ala Ser Ser Ser Glu Ala Phe Leu  
6965 6970 6975

Ile Gly Ala Asn Tyr Leu Gly Lys Pro Lys Glu Gln Ile Asp Gly Tyr  
6980 6985 6990

Thr Met His Ala Asn Tyr Ile Phe Trp Arg Asn Thr Asn Pro Ile Gln  
6995 7000 7005

Leu Ser Ser Tyr Ser Leu Phe Asp Met Ser Lys Phe Pro Leu Lys Leu  
7010 7015 7020

Arg Gly Thr Ala Val Met Ser Leu Lys Glu Asn Gln Ile Asn Asp Met  
7025 7030 7035 7040

Ile Tyr Ser Leu Leu Glu Lys Gly Arg Leu Ile Ile Arg Glu Asn Asn  
7045 7050 7055

Arg Val Val Val Ser Ser Asp Ile Leu Val Asn Asn  
7060 7065

<210> 7249  
<211> 7069  
<212> PRT  
<213> SARS coronavirus

<400> 7249  
Met Glu Ser Leu Val Leu Gly Val Asn Glu Lys Thr His Val Gln Leu  
1 5 10 15

Ser Leu Pro Val Leu Gln Val Arg Asp Val Leu Val Arg Gly Phe Gly  
20 25 30

Asp Ser Val Glu Glu Ala Leu Ser Glu Ala Arg Glu His Leu Lys Asn  
35 40 45

Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val Leu Pro Gln Leu  
50 55 60

Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala Leu Ser Thr Asn  
65 70 75 80

His Gly His Lys Val Val Glu Leu Val Ala Glu Met Asp Gly Ile Gln  
85 90 95

Tyr Gly Arg Ser Gly Ile Thr Leu Gly Val Leu Val Pro His Val Gly  
100 105 110

Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg Lys Asn Gly Asn  
115 120 125

Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu Lys Ser Tyr Asp  
130 135 140

Leu Gly Asp Glu Leu Gly Thr Asp Pro Ile Glu Asp Tyr Glu Gln Asn  
145 150 155 160

Trp Asn Thr Lys His Gly Ser Gly Ala Leu Arg Glu Leu Thr Arg Glu  
165 170 175

SEQLIST-20480.TXT

Leu Asn Gly Gly Ala Val Thr Arg Tyr Val Asp Asn Asn Phe Cys Gly  
 180 185 190  
 Pro Asp Gly Tyr Pro Leu Asp Cys Ile Lys Asp Phe Leu Ala Arg Ala  
 195 200 205  
 Gly Lys Ser Met Cys Thr Leu Ser Glu Gln Leu Asp Tyr Ile Glu Ser  
 210 215 220  
 Lys Arg Gly Val Tyr Cys Cys Arg Asp His Glu His Glu Ile Ala Trp  
 225 230 235 240  
 Phe Thr Glu Arg Ser Asp Lys Ser Tyr Glu His Gln Thr Pro Phe Glu  
 245 250 255  
 Ile Lys Ser Ala Lys Lys Phe Asp Thr Phe Lys Gly Glu Cys Pro Lys  
 260 265 270  
 Phe Val Phe Pro Leu Asn Ser Lys Val Lys Val Ile Gln Pro Arg Val  
 275 280 285  
 Glu Lys Lys Lys Thr Glu Gly Phe Met Gly Arg Ile Arg Ser Val Tyr  
 290 295 300  
 Pro Val Ala Ser Pro Gln Glu Cys Asn Asn Met His Leu Ser Thr Leu  
 305 310 315 320  
 Met Lys Cys Asn His Cys Asp Glu Val Ser Trp Gln Thr Cys Asp Phe  
 325 330 335  
 Leu Lys Ala Thr Cys Glu His Cys Gly Thr Glu Asn Leu Val Ile Glu  
 340 345 350  
 Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met  
 355 360 365  
 Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val  
 370 375 380  
 Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly  
 385 390 395 400  
 Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys  
 405 410 415  
 Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly  
 420 425 430  
 Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu  
 435 440 445  
 Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val  
 450 455 460  
 Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe  
 465 470 475 480  
 Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr  
 485 490 495  
 Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr  
 500 505 510

SEQLIST-20480.TXT

Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser  
 515 520 525  
 Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala Ala Gly Val Ile  
 530 535 540  
 Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pro  
 545 550 555 560  
 Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln  
 565 570 575  
 Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser Asp Leu Leu Thr  
 580 585 590  
 Asn Ser Val Ile Ile Met Ala Tyr Val Thr Gly Gly Leu Val Gln Gln  
 595 600 605  
 Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr Val Glu Lys Leu  
 610 615 620  
 Arg Pro Ile Phe Glu Trp Ile Glu Ala Lys Leu Ser Ala Gly Val Glu  
 625 630 635 640  
 Phe Leu Lys Asp Ala Trp Glu Ile Leu Lys Phe Leu Ile Thr Gly Val  
 645 650 655  
 Phe Asp Ile Val Lys Gly Gln Ile Gln Val Ala Ser Asp Asn Ile Lys  
 660 665 670  
 Asp Cys Val Lys Cys Phe Ile Asp Val Val Asn Lys Ala Leu Glu Met  
 675 680 685  
 Cys Ile Asp Gln Val Thr Ile Ala Gly Ala Lys Leu Arg Ser Leu Asn  
 690 695 700  
 Leu Gly Glu Val Phe Ile Ala Gln Ser Lys Gly Leu Tyr Arg Gln Cys  
 705 710 715 720  
 Ile Arg Gly Lys Glu Gln Leu Gln Leu Leu Met Pro Leu Lys Ala Pro  
 725 730 735  
 Lys Glu Val Thr Phe Leu Glu Gly Asp Ser His Asp Thr Val Leu Thr  
 740 745 750  
 Ser Glu Glu Val Val Leu Lys Asn Gly Glu Leu Glu Ala Leu Glu Thr  
 755 760 765  
 Pro Val Asp Ser Phe Thr Asn Gly Ala Ile Val Gly Thr Pro Val Cys  
 770 775 780  
 Val Asn Gly Leu Met Leu Leu Glu Ile Lys Asp Lys Glu Gln Tyr Cys  
 785 790 795 800  
 Ala Leu Ser Pro Gly Leu Leu Ala Thr Asn Asn Val Phe Arg Leu Lys  
 805 810 815  
 Gly Gly Ala Pro Ile Lys Gly Val Thr Phe Gly Glu Asp Thr Val Trp  
 820 825 830  
 Glu Val Gln Gly Tyr Lys Asn Val Arg Ile Thr Phe Glu Leu Asp Glu  
 835 840 845



SEQLIST-20480.TXT

Arg Val Asp Lys Val Leu Asn Glu Lys Cys Ser Val Tyr Thr Val Glu  
850 855 860

Ser Gly Thr Glu Val Thr Glu Phe Ala Cys Val Val Ala Glu Ala Val  
865 870 875 880

Val Lys Thr Leu Gln Pro Val Ser Asp Leu Leu Thr Asn Met Gly Ile  
885 890 895

Asp Leu Asp Glu Trp Ser Val Ala Thr Phe Tyr Leu Phe Asp Asp Ala  
900 905 910

Gly Glu Glu Asn Phe Ser Ser Arg Met Tyr Cys Ser Phe Tyr Pro Pro  
915 920 925

Asp Glu Glu Glu Glu Asp Asp Ala Glu Cys Glu Glu Glu Glu Ile Asp  
930 935 940

Glu Thr Cys Glu His Glu Tyr Gly Thr Glu Asp Asp Tyr Gln Gly Leu  
945 950 955 960

Pro Leu Glu Phe Gly Ala Ser Ala Glu Thr Val Arg Val Glu Glu Glu  
965 970 975

Glu Glu Glu Asp Trp Leu Asp Asp Thr Thr Glu Gln Ser Glu Ile Glu  
980 985 990

Pro Glu Pro Glu Pro Thr Pro Glu Glu Pro Val Asn Gln Phe Thr Gly  
995 1000 1005

Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Ile Val  
1010 1015 1020

Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala Ala Asn  
1025 1030 1035 1040

Ile His Leu Lys His Gly Gly Gly Val Ala Gly Ala Leu Asn Lys Ala  
1045 1050 1055

Thr Asn Gly Ala Met Gln Lys Glu Ser Asp Asp Tyr Ile Lys Leu Asn  
1060 1065 1070

Gly Pro Leu Thr Val Gly Gly Ser Cys Leu Leu Ser Gly His Asn Leu  
1075 1080 1085

Ala Lys Lys Cys Leu His Val Val Gly Pro Asn Leu Asn Ala Gly Glu  
1090 1095 1100

Asp Ile Gln Leu Leu Lys Ala Ala Tyr Glu Asn Phe Asn Ser Gln Asp  
1105 1110 1115 1120

Ile Leu Leu Ala Pro Leu Leu Ser Ala Gly Ile Phe Gly Ala Lys Pro  
1125 1130 1135

Leu Gln Ser Leu Gln Val Cys Val Gln Thr Val Arg Thr Gln Val Tyr  
1140 1145 1150

Ile Ala Val Asn Asp Lys Ala Leu Tyr Glu Gln Val Val Met Asp Tyr  
1155 1160 1165

Leu Asp Asn Leu Lys Pro Arg Val Glu Ala Pro Lys Gln Glu Glu Pro  
1170 1175 1180

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Pro Asn Thr Glu Asp Ser Lys Thr Glu Glu Lys Ser Val Val Gln Lys  
1185 1190 1195 1200

Pro Val Asp Val Lys Pro Lys Ile Lys Ala Cys Ile Asp Glu Val Thr  
1205 1210 1215

Thr Thr Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys Leu Leu Leu Phe  
1220 1225 1230

Ala Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln Asn Met Leu Arg  
1235 1240 1245

Gly Glu Asp Met Ser Phe Leu Glu Lys Asp Ala Pro Tyr Met Val Gly  
1250 1255 1260

Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val Ile Pro Ser Lys  
1265 1270 1275 1280

Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala Leu Lys Lys Val  
1285 1290 1295

Pro Val Asp Glu Tyr Ile Thr Thr Tyr Pro Gly Gln Gly Cys Ala Gly  
1300 1305 1310

Tyr Thr Leu Glu Glu Ala Lys Thr Ala Leu Lys Lys Cys Lys Ser Ala  
1315 1320 1325

Phe Tyr Val Leu Pro Ser Glu Ala Pro Asn Ala Lys Glu Glu Ile Leu  
1330 1335 1340

Gly Thr Val Ser Trp Asn Leu Arg Glu Met Leu Ala His Ala Glu Glu  
1345 1350 1355 1360

Thr Arg Lys Leu Met Pro Ile Cys Met Asp Val Arg Ala Ile Met Ala  
1365 1370 1375

Thr Ile Gln Arg Lys Tyr Lys Gly Ile Lys Ile Gln Glu Gly Ile Val  
1380 1385 1390

Asp Tyr Gly Val Arg Phe Phe Phe Tyr Thr Ser Lys Glu Pro Val Ala  
1395 1400 1405

Ser Ile Ile Thr Lys Leu Asn Ser Leu Asn Glu Pro Leu Val Thr Met  
1410 1415 1420

Pro Ile Gly Tyr Val Thr His Gly Phe Asn Leu Glu Glu Ala Ala Arg  
1425 1430 1435 1440

Cys Met Arg Ser Leu Lys Ala Pro Ala Val Val Ser Val Ser Ser Pro  
1445 1450 1455

Asp Ala Val Thr Thr Tyr Asn Gly Tyr Leu Thr Ser Ser Ser Lys Thr  
1460 1465 1470

Ser Glu Glu His Phe Val Glu Thr Val Ser Leu Ala Gly Ser Tyr Arg  
1475 1480 1485

Asp Trp Ser Tyr Ser Gly Gln Arg Thr Glu Leu Gly Val Glu Phe Leu  
1490 1495 1500

Lys Arg Gly Asp Lys Ile Val Tyr His Thr Leu Glu Ser Pro Val Glu  
1505 1510 1515 1520

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Phe His Leu Asp Gly Glu Val Leu Ser Leu Asp Lys Leu Lys Ser Leu  
 1525 1530 1535  
 Leu Ser Leu Arg Glu Val Lys Thr Ile Lys Val Phe Thr Thr Val Asp  
 1540 1545 1550  
 Asn Thr Asn Leu His Thr Gln Leu Val Asp Met Ser Met Thr Tyr Gly  
 1555 1560 1565  
 Gln Gln Phe Gly Pro Thr Tyr Leu Asp Gly Ala Asp Val Thr Lys Ile  
 1570 1575 1580  
 Lys Pro His Val Asn His Glu Gly Lys Thr Phe Phe Val Leu Pro Ser  
 1585 1590 1595 1600  
 Asp Asp Thr Leu Arg Ser Glu Ala Phe Glu Tyr Tyr His Thr Leu Asp  
 1605 1610 1615  
 Glu Ser Phe Leu Gly Arg Tyr Met Ser Ala Leu Asn His Thr Lys Lys  
 1620 1625 1630  
 Trp Lys Phe Pro Gln Val Gly Gly Leu Thr Ser Ile Lys Trp Ala Asp  
 1635 1640 1645  
 Asn Asn Cys Tyr Leu Ser Ser Val Leu Leu Ala Leu Gln Gln Leu Glu  
 1650 1655 1660  
 Val Lys Phe Asn Ala Pro Ala Leu Gln Glu Ala Tyr Tyr Arg Ala Arg  
 1665 1670 1675 1680  
 Ala Gly Asp Ala Ala Asn Phe Cys Ala Leu Ile Leu Ala Tyr Ser Asn  
 1685 1690 1695  
 Lys Thr Val Gly Glu Leu Gly Asp Val Arg Glu Thr Met Thr His Leu  
 1700 1705 1710  
 Leu Gln His Ala Asn Leu Glu Ser Ala Lys Arg Val Leu Asn Val Val  
 1715 1720 1725  
 Cys Lys His Cys Gly Gln Lys Thr Thr Thr Leu Thr Gly Val Glu Ala  
 1730 1735 1740  
 Val Met Tyr Met Gly Thr Leu Ser Tyr Asp Asn Leu Lys Thr Gly Val  
 1745 1750 1755 1760  
 Ser Ile Pro Cys Val Cys Gly Arg Asp Ala Thr Gln Tyr Leu Val Gln  
 1765 1770 1775  
 Gln Glu Ser Ser Phe Val Met Met Ser Ala Pro Pro Ala Glu Tyr Lys  
 1780 1785 1790  
 Leu Gln Gln Gly Thr Phe Leu Cys Ala Asn Glu Tyr Thr Gly Asn Tyr  
 1795 1800 1805  
 Gln Cys Gly His Tyr Thr His Ile Thr Ala Lys Glu Thr Leu Tyr Arg  
 1810 1815 1820  
 Ile Asp Gly Ala His Leu Thr Lys Met Ser Glu Tyr Lys Gly Pro Val  
 1825 1830 1835 1840  
 Thr Asp Val Phe Tyr Lys Glu Thr Ser Tyr Thr Thr Thr Ile Lys Pro  
 1845 1850 1855

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Val Ser Tyr Lys Leu Asp Gly Val Thr Tyr Thr Glu Ile Glu Pro Lys  
1860 1865 1870

Leu Asp Gly Tyr Tyr Lys Lys Asp Asn Ala Tyr Tyr Thr Glu Gln Pro  
1875 1880 1885

Ile Asp Leu Val Pro Thr Gln Pro Leu Pro Asn Ala Ser Phe Asp Asn  
1890 1895 1900

Phe Lys Leu Thr Cys Ser Asn Thr Lys Phe Ala Asp Asp Leu Asn Gln  
1905 1910 1915 1920

Met Thr Gly Phe Thr Lys Pro Ala Ser Arg Glu Leu Ser Val Thr Phe  
1925 1930 1935

Phe Pro Asp Leu Asn Gly Asp Val Val Ala Ile Asp Tyr Arg His Tyr  
1940 1945 1950

Ser Ala Ser Phe Lys Lys Gly Ala Lys Leu Leu His Lys Pro Ile Val  
1955 1960 1965

Trp His Ile Asn Gln Ala Thr Thr Lys Thr Thr Phe Lys Pro Asn Thr  
1970 1975 1980

Trp Cys Leu Arg Cys Leu Trp Ser Thr Lys Pro Val Asp Thr Ser Asn  
1985 1990 1995 2000

Ser Phe Glu Val Leu Ala Val Glu Asp Thr Gln Gly Met Asp Asn Leu  
2005 2010 2015

Ala Cys Glu Ser Gln Gln Pro Thr Ser Glu Glu Val Val Glu Asn Pro  
2020 2025 2030

Thr Ile Gln Lys Glu Val Ile Glu Cys Asp Val Lys Thr Thr Glu Val  
2035 2040 2045

Val Gly Asn Val Ile Leu Lys Pro Ser Asp Glu Gly Val Lys Val Thr  
2050 2055 2060

Gln Glu Leu Gly His Glu Asp Leu Met Ala Ala Tyr Val Glu Asn Thr  
2065 2070 2075 2080

Ser Ile Thr Ile Lys Lys Pro Asn Glu Leu Ser Leu Ala Leu Gly Leu  
2085 2090 2095

Lys Thr Ile Ala Thr His Gly Ile Ala Ala Ile Asn Ser Val Pro Trp  
2100 2105 2110

Ser Lys Ile Leu Ala Tyr Val Lys Pro Phe Leu Gly Gln Ala Ala Ile  
2115 2120 2125

Thr Thr Ser Asn Cys Ala Lys Arg Leu Ala Gln Arg Val Phe Asn Asn  
2130 2135 2140

Tyr Met Pro Tyr Val Phe Thr Leu Leu Phe Gln Leu Cys Thr Phe Thr  
2145 2150 2155 2160

Lys Ser Thr Asn Ser Arg Ile Arg Ala Ser Leu Pro Thr Thr Ile Ala  
2165 2170 2175

Lys Asn Ser Val Lys Ser Val Ala Lys Leu Cys Leu Asp Ala Gly Ile  
2180 2185 2190

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Asn Tyr Val Lys Ser Pro Lys Phe Ser Lys Leu Phe Thr Ile Ala Met  
 2195 2200 2205  
 Trp Leu Leu Leu Leu Ser Ile Cys Leu Gly Ser Leu Ile Cys Val Thr  
 2210 2215 2220  
 Ala Ala Phe Gly Val Leu Leu Ser Asn Phe Gly Ala Pro Ser Tyr Cys  
 2225 2230 2235 2240  
 Asn Gly Val Arg Glu Leu Tyr Leu Asn Ser Ser Asn Val Thr Thr Met  
 2245 2250 2255  
 Asp Phe Cys Glu Gly Ser Phe Pro Cys Ser Ile Cys Leu Ser Gly Leu  
 2260 2265 2270  
 Asp Ser Leu Asp Ser Tyr Pro Ala Leu Glu Thr Ile Gln Val Thr Ile  
 2275 2280 2285  
 Ser Ser Tyr Lys Leu Asp Leu Thr Ile Leu Gly Leu Ala Ala Glu Trp  
 2290 2295 2300  
 Val Leu Ala Tyr Met Leu Phe Thr Lys Phe Phe Tyr Leu Leu Gly Leu  
 2305 2310 2315 2320  
 Ser Ala Ile Met Gln Val Phe Phe Gly Tyr Phe Ala Ser His Phe Ile  
 2325 2330 2335  
 Ser Asn Ser Trp Leu Met Trp Phe Ile Ile Ser Ile Val Gln Met Ala  
 2340 2345 2350  
 Pro Val Ser Ala Met Val Arg Met Tyr Ile Phe Phe Ala Ser Phe Tyr  
 2355 2360 2365  
 Tyr Ile Trp Lys Ser Tyr Val His Ile Met Asp Gly Cys Thr Ser Ser  
 2370 2375 2380  
 Thr Cys Met Met Cys Tyr Lys Arg Asn Arg Ala Thr Arg Val Glu Cys  
 2385 2390 2400  
 Thr Thr Ile Val Asn Gly Met Lys Arg Ser Phe Tyr Val Tyr Ala Asn  
 2405 2410 2415  
 Gly Gly Arg Gly Phe Cys Lys Thr His Asn Trp Asn Cys Leu Asn Cys  
 2420 2425 2430  
 Asp Thr Phe Cys Thr Gly Ser Thr Phe Ile Ser Asp Glu Val Ala Arg  
 2435 2440 2445  
 Asp Leu Ser Leu Gln Phe Lys Arg Pro Ile Asn Pro Thr Asp Gln Ser  
 2450 2455 2460  
 Ser Tyr Ile Val Asp Ser Val Ala Val Lys Asn Gly Ala Leu His Leu  
 2465 2470 2475 2480  
 Tyr Phe Asp Lys Ala Gly Gln Lys Thr Tyr Glu Arg His Pro Leu Ser  
 2485 2490 2495  
 His Phe Val Asn Leu Asp Asn Leu Arg Ala Asn Asn Thr Lys Gly Ser  
 2500 2505 2510  
 Leu Pro Ile Asn Val Ile Val Phe Asp Gly Lys Ser Lys Cys Asp Glu  
 2515 2520 2525

SEQLIST-20480.TXT

Ser Ala Ser Lys Ser Ala Ser Val Tyr Tyr Ser Gln Leu Met Cys Gln  
2530 2535 2540

Pro Ile Leu Leu Leu Asp Gln Ala Leu Val Ser Asp Val Gly Asp Ser  
2545 2550 2555 2560

Thr Glu Val Ser Val Lys Met Phe Asp Ala Tyr Val Asp Thr Phe Ser  
2565 2570 2575

Ala Thr Phe Ser Val Pro Met Glu Lys Leu Lys Ala Leu Val Ala Thr  
2580 2585 2590

Ala His Ser Glu Leu Ala Lys Gly Val Ala Leu Asp Gly Val Leu Ser  
2595 2600 2605

Thr Phe Val Ser Ala Ala Arg Gln Gly Val Val Asp Thr Asp Val Asp  
2610 2615 2620

Thr Lys Asp Val Ile Glu Cys Leu Lys Leu Ser His His Ser Asp Leu  
2625 2630 2635 2640

Glu Val Thr Gly Asp Ser Cys Asn Asn Phe Met Leu Thr Tyr Asn Lys  
2645 2650 2655

Val Glu Asn Met Thr Pro Arg Asp Leu Gly Ala Cys Ile Asp Cys Asn  
2660 2665 2670

Ala Arg His Ile Asn Ala Gln Val Ala Lys Ser His Asn Val Ser Leu  
2675 2680 2685

Ile Trp Asn Val Lys Asp Tyr Met Ser Leu Ser Glu Gln Leu Arg Lys  
2690 2695 2700

Gln Ile Arg Ser Ala Ala Lys Lys Asn Asn Ile Pro Phe Arg Leu Thr  
2705 2710 2715 2720

Cys Ala Thr Thr Arg Gln Val Val Asn Val Ile Thr Thr Lys Ile Ser  
2725 2730 2735

Leu Lys Gly Gly Lys Ile Val Ser Thr Cys Phe Lys Leu Met Leu Lys  
2740 2745 2750

Ala Thr Leu Leu Cys Val Leu Ala Ala Leu Val Cys Tyr Ile Val Met  
2755 2760 2765

Pro Val His Thr Leu Ser Ile His Asp Gly Tyr Thr Asn Glu Ile Ile  
2770 2775 2780

Gly Tyr Lys Ala Ile Gln Asp Gly Val Thr Arg Asp Ile Ile Ser Thr  
2785 2790 2795 2800

Asp Asp Cys Phe Ala Asn Lys His Ala Gly Phe Asp Ala Trp Phe Ser  
2805 2810 2815

Gln Arg Gly Gly Ser Tyr Lys Asn Asp Lys Ser Cys Pro Val Val Ala  
2820 2825 2830

Ala Ile Ile Thr Arg Glu Ile Gly Phe Ile Val Pro Gly Leu Pro Gly  
2835 2840 2845

Thr Val Leu Arg Ala Ile Asn Gly Asp Phe Leu His Phe Leu Pro Arg  
2850 2855 2860

SEQLIST-20480.TXT

Val Phe Ser Ala Val Gly Asn Ile Cys Tyr Thr Pro Ser Lys Leu Ile  
2865 2870 2875 2880

Glu Tyr Ser Asp Phe Ala Thr Ser Ala Cys Val Leu Ala Ala Glu Cys  
2885 2890 2895

Thr Ile Phe Lys Asp Ala Met Gly Lys Pro Val Pro Tyr Cys Tyr Asp  
2900 2905 2910

Thr Asn Leu Leu Glu Gly Ser Ile Ser Tyr Ser Glu Leu Arg Pro Asp  
2915 2920 2925

Thr Arg Tyr Val Leu Met Asp Gly Ser Ile Ile Gln Phe Pro Asn Thr  
2930 2935 2940

Tyr Leu Glu Gly Ser Val Arg Val Val Thr Thr Phe Asp Ala Glu Tyr  
2945 2950 2955 2960

Cys Arg His Gly Thr Cys Glu Arg Ser Glu Val Gly Ile Cys Leu Ser  
2965 2970 2975

Thr Ser Gly Arg Trp Val Leu Asn Asn Glu His Tyr Arg Ala Leu Ser  
2980 2985 2990

Gly Val Phe Cys Gly Val Asp Ala Met Asn Leu Ile Ala Asn Ile Phe  
2995 3000 3005

Thr Pro Leu Val Gln Pro Val Gly Ala Leu Asp Val Ser Ala Ser Val  
3010 3015 3020

Val Ala Gly Gly Ile Ile Ala Ile Leu Val Thr Cys Ala Ala Tyr Tyr  
3025 3030 3035 3040

Phe Met Lys Phe Arg Arg Val Phe Gly Glu Tyr Asn His Val Val Ala  
3045 3050 3055

Ala Asn Ala Leu Leu Phe Leu Met Ser Phe Thr Ile Leu Cys Leu Val  
3060 3065 3070

Pro Ala Tyr Ser Phe Leu Pro Gly Val Tyr Ser Val Phe Tyr Leu Tyr  
3075 3080 3085

Leu Thr Phe Tyr Phe Thr Asn Asp Val Ser Phe Leu Ala His Leu Gln  
3090 3095 3100

Trp Phe Ala Met Phe Ser Pro Ile Val Pro Phe Trp Ile Thr Ala Ile  
3105 3110 3115 3120

Tyr Val Phe Cys Ile Ser Leu Lys His Cys His Trp Phe Phe Asn Asn  
3125 3130 3135

Tyr Leu Arg Lys Arg Val Met Phe Asn Gly Val Thr Phe Ser Thr Phe  
3140 3145 3150

Glu Glu Ala Ala Leu Cys Thr Phe Leu Leu Asn Lys Glu Met Tyr Leu  
3155 3160 3165

Lys Leu Arg Ser Glu Thr Leu Leu Pro Leu Thr Gln Tyr Asn Arg Tyr  
3170 3175 3180

Leu Ala Leu Tyr Asn Lys Tyr Lys Tyr Phe Ser Gly Ala Leu Asp Thr  
3185 3190 3195 3200

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Thr Ser Tyr Arg Glu Ala Ala Cys Cys His Leu Ala Lys Ala Leu Asn  
3205 3210 3215

Asp Phe Ser Asn Ser Gly Ala Asp Val Leu Tyr Gln Pro Pro Gln Thr  
3220 3225 3230

Ser Ile Thr Ser Ala Val Leu Gln Ser Gly Phe Arg Lys Met Ala Phe  
3235 3240 3245

Pro Ser Gly Lys Val Glu Gly Cys Met Val Gln Val Thr Cys Gly Thr  
3250 3255 3260

Thr Thr Leu Asn Gly Leu Trp Leu Asp Asp Thr Val Tyr Cys Pro Arg  
3265 3270 3275 3280

His Val Ile Cys Thr Ala Glu Asp Met Leu Asn Pro Asn Tyr Glu Asp  
3285 3290 3295

Leu Leu Ile Arg Lys Ser Asn His Ser Phe Leu Val Gln Ala Gly Asn  
3300 3305 3310

Val Gln Leu Arg Val Ile Gly His Ser Met Gln Asn Cys Leu Leu Arg  
3315 3320 3325

Leu Lys Val Asp Thr Ser Asn Pro Lys Thr Pro Lys Tyr Lys Phe Val  
3330 3335 3340

Arg Ile Gln Pro Gly Gln Thr Phe Ser Val Leu Ala Cys Tyr Asn Gly  
3345 3350 3355 3360

Ser Pro Ser Gly Val Tyr Gln Cys Ala Met Arg Pro Asn His Thr Ile  
3365 3370 3375

Lys Gly Ser Phe Leu Asn Gly Ser Cys Gly Ser Val Gly Phe Asn Ile  
3380 3385 3390

Asp Tyr Asp Cys Val Ser Phe Cys Tyr Met His His Met Glu Leu Pro  
3395 3400 3405

Thr Gly Val His Ala Gly Thr Asp Leu Glu Gly Lys Phe Tyr Gly Pro  
3410 3415 3420

Phe Val Asp Arg Gln Thr Ala Gln Ala Ala Gly Thr Asp Thr Thr Ile  
3425 3430 3435 3440

Thr Leu Asn Val Leu Ala Trp Leu Tyr Ala Ala Val Ile Asn Gly Asp  
3445 3450 3455

Arg Trp Phe Leu Asn Arg Phe Thr Thr Thr Leu Asn Asp Phe Asn Leu  
3460 3465 3470

Val Ala Met Lys Tyr Asn Tyr Glu Pro Leu Thr Gln Asp His Val Asp  
3475 3480 3485

Ile Leu Gly Pro Leu Ser Ala Gln Thr Gly Ile Ala Val Leu Asp Met  
3490 3495 3500

Cys Ala Ala Leu Lys Glu Leu Leu Gln Asn Gly Met Asn Gly Arg Thr  
3505 3510 3515 3520

Ile Leu Gly Ser Thr Ile Leu Glu Asp Glu Phe Thr Pro Phe Asp Val  
3525 3530 3535



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Val Arg Gln Cys Ser Gly Val Thr Phe Gln Gly Lys Phe Lys Lys Ile  
3540 3545 3550

Val Lys Gly Thr His His Trp Met Leu Leu Thr Phe Leu Thr Ser Leu  
3555 3560 3565

Leu Ile Leu Val Gln Ser Thr Gln Trp Ser Leu Phe Phe Phe Val Tyr  
3570 3575 3580

Glu Asn Ala Phe Leu Pro Phe Thr Leu Gly Ile Met Ala Ile Ala Ala  
3585 3590 3595 3600

Cys Ala Met Leu Leu Val Lys His Lys His Ala Phe Leu Cys Leu Phe  
3605 3610 3615

Leu Leu Pro Ser Leu Ala Thr Val Ala Tyr Phe Asn Met Val Tyr Met  
3620 3625 3630

Pro Ala Ser Trp Val Met Arg Ile Met Thr Trp Leu Glu Leu Ala Asp  
3635 3640 3645

Thr Ser Leu Ser Gly Tyr Arg Leu Lys Asp Cys Val Met Tyr Ala Ser  
3650 3655 3660

Ala Leu Val Leu Leu Ile Leu Met Thr Ala Arg Thr Val Tyr Asp Asp  
3665 3670 3675 3680

Ala Ala Arg Arg Val Trp Thr Leu Met Asn Val Ile Thr Leu Val Tyr  
3685 3690 3695

Lys Val Tyr Tyr Gly Asn Ala Leu Asp Gln Ala Ile Ser Met Trp Ala  
3700 3705 3710

Leu Val Ile Ser Val Thr Ser Asn Tyr Ser Gly Val Val Thr Thr Ile  
3715 3720 3725

Met Phe Leu Ala Arg Ala Ile Val Phe Val Cys Val Glu Tyr Tyr Pro  
3730 3735 3740

Leu Leu Phe Ile Thr Gly Asn Thr Leu Gln Cys Ile Met Leu Val Tyr  
3745 3750 3755 3760

Cys Phe Leu Gly Tyr Cys Cys Cys Cys Tyr Phe Gly Leu Phe Cys Leu  
3765 3770 3775

Leu Asn Arg Tyr Phe Arg Leu Thr Leu Gly Val Tyr Asp Tyr Leu Val  
3780 3785 3790

Ser Thr Gln Glu Phe Arg Tyr Met Asn Ser Gln Gly Leu Leu Pro Pro  
3795 3800 3805

Lys Ser Ser Ile Asp Ala Phe Lys Leu Asn Ile Lys Leu Leu Gly Ile  
3810 3815 3820

Gly Gly Lys Pro Cys Ile Lys Val Ala Thr Val Gln Ser Lys Met Ser  
3825 3830 3835 3840

Asp Val Lys Cys Thr Ser Val Val Leu Leu Ser Val Leu Gln Gln Leu  
3845 3850 3855

Arg Val Glu Ser Ser Ser Lys Leu Trp Ala Gln Cys Val Gln Leu His  
3860 3865 3870

SEQLIST-20480.TXT

Asn Asp Ile Leu Leu Ala Lys Asp Thr Thr Glu Ala Phe Glu Lys Met  
3875 3880 3885

Val Ser Leu Leu Ser Val Leu Leu Ser Met Gln Gly Ala Val Asp Ile  
3890 3895 3900

Asn Arg Leu Cys Glu Glu Met Leu Asp Asn Arg Ala Thr Leu Gln Ala  
3905 3910 3915 3920

Ile Ala Ser Glu Phe Ser Ser Leu Pro Ser Tyr Ala Ala Tyr Ala Thr  
3925 3930 3935

Ala Gln Glu Ala Tyr Glu Gln Ala Val Ala Asn Gly Asp Ser Glu Val  
3940 3945 3950

Val Leu Lys Lys Leu Lys Lys Ser Leu Asn Val Ala Lys Ser Glu Phe  
3955 3960 3965

Asp Arg Asp Ala Ala Met Gln Arg Lys Leu Glu Lys Met Ala Asp Gln  
3970 3975 3980

Ala Met Thr Gln Met Tyr Lys Gln Ala Arg Ser Glu Asp Lys Arg Ala  
3985 3990 3995 4000

Lys Val Thr Ser Ala Met Gln Thr Met Leu Phe Thr Met Leu Arg Lys  
4005 4010 4015

Leu Asp Asn Asp Ala Leu Asn Asn Ile Ile Asn Asn Ala Arg Asp Gly  
4020 4025 4030

Cys Val Pro Leu Asn Ile Ile Pro Leu Thr Thr Ala Ala Lys Leu Met  
4035 4040 4045

Val Val Val Pro Asp Tyr Gly Thr Tyr Lys Asn Thr Cys Asp Gly Asn  
4050 4055 4060

Thr Phe Thr Tyr Ala Ser Ala Leu Trp Glu Ile Gln Gln Val Val Asp  
4065 4070 4075 4080

Ala Asp Ser Lys Ile Val Gln Leu Ser Glu Ile Asn Met Asp Asn Ser  
4085 4090 4095

Pro Asn Leu Ala Trp Pro Leu Ile Val Thr Ala Leu Arg Ala Asn Ser  
4100 4105 4110

Ala Val Lys Leu Gln Asn Asn Glu Leu Ser Pro Val Ala Leu Arg Gln  
4115 4120 4125

Met Ser Cys Ala Ala Gly Thr Thr Gln Thr Ala Cys Thr Asp Asp Asn  
4130 4135 4140

Ala Leu Ala Tyr Tyr Asn Asn Ser Lys Gly Gly Arg Phe Val Leu Ala  
4145 4150 4155 4160

Leu Leu Ser Asp His Gln Asp Leu Lys Trp Ala Arg Phe Pro Lys Ser  
4165 4170 4175

Asp Gly Thr Gly Thr Ile Tyr Thr Glu Leu Glu Pro Pro Cys Arg Phe  
4180 4185 4190

Val Thr Asp Thr Pro Lys Gly Pro Lys Val Lys Tyr Leu Tyr Phe Ile  
4195 4200 4205

SEQLIST-20480.TXT

Lys Gly Leu Asn Asn Leu Asn Arg Gly Met Val Leu Gly Ser Leu Ala  
 4210 4215 4220  
 Ala Thr Val Arg Leu Gln Ala Gly Asn Ala Thr Glu Val Pro Ala Asn  
 4225 4230 4235 4240  
 Ser Thr Val Leu Ser Phe Cys Ala Phe Ala Val Asp Pro Ala Lys Ala  
 4245 4250 4255  
 Tyr Lys Asp Tyr Leu Ala Ser Gly Gly Gln Pro Ile Thr Asn Cys Val  
 4260 4265 4270  
 Lys Met Leu Cys Thr His Thr Gly Thr Gly Gln Ala Ile Thr Val Thr  
 4275 4280 4285  
 Pro Glu Ala Asn Met Asp Gln Glu Ser Phe Gly Gly Ala Ser Cys Cys  
 4290 4295 4300  
 Leu Tyr Cys Arg Cys His Ile Asp His Pro Asn Pro Lys Gly Phe Cys  
 4305 4310 4315 4320  
 Asp Leu Lys Gly Lys Tyr Val Gln Ile Pro Thr Thr Cys Ala Asn Asp  
 4325 4330 4335  
 Pro Val Gly Phe Thr Leu Arg Asn Thr Val Cys Thr Val Cys Gly Met  
 4340 4345 4350  
 Trp Lys Gly Tyr Gly Cys Ser Cys Asp Gln Leu Arg Glu Pro Leu Met  
 4355 4360 4365  
 Gln Ser Ala Asp Ala Ser Thr Phe Leu Gly Val Ser Ala Ala Arg Leu  
 4370 4375 4380  
 Thr Pro Cys Gly Thr Gly Thr Ser Thr Asp Val Val Tyr Arg Ala Phe  
 4385 4390 4395 4400  
 Asp Ile Tyr Asn Glu Lys Val Ala Gly Phe Ala Lys Phe Leu Lys Thr  
 4405 4410 4415  
 Asn Cys Cys Arg Phe Gln Glu Lys Asp Glu Glu Gly Asn Leu Leu Asp  
 4420 4425 4430  
 Ser Tyr Phe Val Val Lys Arg His Thr Met Ser Asn Tyr Gln His Glu  
 4435 4440 4445  
 Glu Thr Ile Tyr Asn Leu Val Lys Asp Cys Pro Ala Val Ala Val His  
 4450 4455 4460  
 Asp Phe Phe Lys Phe Arg Val Asp Gly Asp Met Val Pro His Ile Ser  
 4465 4470 4475 4480  
 Arg Gln Arg Leu Thr Lys Tyr Thr Met Ala Asp Leu Val Tyr Ala Leu  
 4485 4490 4495  
 Arg His Phe Asp Glu Gly Asn Cys Asp Thr Leu Lys Glu Ile Leu Val  
 4500 4505 4510  
 Thr Tyr Asn Cys Cys Asp Asp Asp Tyr Phe Asn Lys Lys Asp Trp Tyr  
 4515 4520 4525  
 Asp Phe Val Glu Asn Pro Asp Ile Leu Arg Val Tyr Ala Asn Leu Gly  
 4530 4535 4540

SEQLIST-20480.TXT

Glu Arg Val Arg Gln Ser Leu Leu Lys Thr Val Gln Phe Cys Asp Ala  
 4545 4550 4555 4560  
 Met Arg Asp Ala Gly Ile Val Gly Val Leu Thr Leu Asp Asn Gln Asp  
 4565 4570 4575  
 Leu Asn Gly Asn Trp Tyr Asp Phe Gly Asp Phe Val Gln Val Ala Pro  
 4580 4585 4590  
 Gly Cys Gly Val Pro Ile Val Asp Ser Tyr Tyr Ser Leu Leu Met Pro  
 4595 4600 4605  
 Ile Leu Thr Leu Thr Arg Ala Leu Ala Ala Glu Ser His Met Asp Ala  
 4610 4615 4620  
 Asp Leu Ala Lys Pro Leu Ile Lys Trp Asp Leu Leu Lys Tyr Asp Phe  
 4625 4630 4635 4640  
 Thr Glu Glu Arg Leu Cys Leu Phe Asp Arg Tyr Phe Lys Tyr Trp Asp  
 4645 4650 4655  
 Gln Thr Tyr His Pro Asn Cys Ile Asn Cys Leu Asp Asp Arg Cys Ile  
 4660 4665 4670  
 Leu His Cys Ala Asn Phe Asn Val Leu Phe Ser Thr Val Phe Pro Pro  
 4675 4680 4685  
 Thr Ser Phe Gly Pro Leu Val Arg Lys Ile Phe Val Asp Gly Val Pro  
 4690 4695 4700  
 Phe Val Val Ser Thr Gly Tyr His Phe Arg Glu Leu Gly Val Val His  
 4705 4710 4715 4720  
 Asn Gln Asp Val Asn Leu His Ser Ser Arg Leu Ser Phe Lys Glu Leu  
 4725 4730 4735  
 Leu Val Tyr Ala Ala Asp Pro Ala Met His Ala Ala Ser Gly Asn Leu  
 4740 4745 4750  
 Leu Leu Asp Lys Arg Thr Thr Cys Phe Ser Val Ala Ala Leu Thr Asn  
 4755 4760 4765  
 Asn Val Ala Phe Gln Thr Val Lys Pro Gly Asn Phe Asn Lys Asp Phe  
 4770 4775 4780  
 Tyr Asp Phe Ala Val Ser Lys Gly Phe Phe Lys Glu Gly Ser Ser Val  
 4785 4790 4795 4800  
 Glu Leu Lys His Phe Phe Phe Ala Gln Asp Gly Asn Ala Ala Ile Ser  
 4805 4810 4815  
 Asp Tyr Asp Tyr Tyr Arg Tyr Asn Leu Pro Thr Met Cys Asp Ile Arg  
 4820 4825 4830  
 Gln Leu Leu Phe Val Val Glu Val Val Asp Lys Tyr Phe Asp Cys Tyr  
 4835 4840 4845  
 Asp Gly Gly Cys Ile Asn Ala Asn Gln Val Ile Val Asn Asn Leu Asp  
 4850 4855 4860  
 Lys Ser Ala Gly Phe Pro Phe Asn Lys Trp Gly Lys Ala Arg Leu Tyr  
 4865 4870 4875 4880

SEQLIST-20480.TXT

Tyr Asp Ser Met Ser Tyr Glu Asp Gln Asp Ala Leu Phe Ala Tyr Thr  
4885 4890

Lys Arg Asn Val Ile Pro Thr Ile Thr Gln Met Asn Leu Lys Tyr Ala  
4900 4905 4910

Ile Ser Ala Lys Asn Arg Ala Arg Thr Val Ala Gly Val Ser Ile Cys  
4915 4920 4925

Ser Thr Met Thr Asn Arg Gln Phe His Gln Lys Leu Leu Lys Ser Ile  
4930 4935 4940

Ala Ala Thr Arg Gly Ala Thr Val Val Ile Gly Thr Ser Lys Phe Tyr  
4945 4950 4955 4960

Gly Gly Trp His Asn Met Leu Lys Thr Val Tyr Ser Asp Val Glu Thr  
4965 4970 4975

Pro His Leu Met Gly Trp Asp Tyr Pro Lys Cys Asp Arg Ala Met Pro  
4980 4985 4990

Asn Met Leu Arg Ile Met Ala Ser Leu Val Leu Ala Arg Lys His Asn  
4995 5000 5005

Thr Cys Cys Asn Leu Ser His Arg Phe Tyr Arg Leu Ala Asn Glu Cys  
5010 5015 5020

Ala Gln Val Leu Ser Glu Met Val Met Cys Gly Gly Ser Leu Tyr Val  
5025 5030 5035 5040

Lys Pro Gly Gly Thr Ser Ser Gly Asp Ala Thr Thr Ala Tyr Ala Asn  
5045 5050 5055

Ser Val Phe Asn Ile Cys Gln Ala Val Thr Ala Asn Val Asn Ala Leu  
5060 5065 5070

Leu Ser Thr Asp Gly Asn Lys Ile Ala Asp Lys Tyr Val Arg Asn Leu  
5075 5080 5085

Gln His Arg Leu Tyr Glu Cys Leu Tyr Arg Asn Arg Asp Val Asp His  
5090 5095 5100

Glu Phe Val Asp Glu Phe Tyr Ala Tyr Leu Arg Lys His Phe Ser Met  
5105 5110 5115 5120

Met Ile Leu Ser Asp Asp Ala Val Val Cys Tyr Asn Ser Asn Tyr Ala  
5125 5130 5135

Ala Gln Gly Leu Val Ala Ser Ile Lys Asn Phe Lys Ala Val Leu Tyr  
5140 5145 5150

Tyr Gln Asn Asn Val Phe Met Ser Glu Ala Lys Cys Trp Thr Glu Thr  
5155 5160 5165

Asp Leu Thr Lys Gly Pro His Glu Phe Cys Ser Gln His Thr Met Leu  
5170 5175 5180

Val Lys Gln Gly Asp Asp Tyr Val Tyr Leu Pro Tyr Pro Asp Pro Ser  
5185 5190 5195 5200

Arg Ile Leu Gly Ala Gly Cys Phe Val Asp Asp Ile Val Lys Thr Asp  
5205 5210 5215

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Gly Thr Leu Met Ile Glu Arg Phe Val Ser Leu Ala Ile Asp Ala Tyr  
5220 5225 5230

Pro Leu Thr Lys His Pro Asn Gln Glu Tyr Ala Asp Val Phe His Leu  
5235 5240 5245

Tyr Leu Gln Tyr Ile Arg Lys Leu His Asp Glu Leu Thr Gly His Met  
5250 5255 5260

Leu Asp Met Tyr Ser Val Met Leu Thr Asn Asp Asn Thr Ser Arg Tyr  
5265 5270 5275 5280

Trp Glu Pro Glu Phe Tyr Glu Ala Met Tyr Thr Pro His Thr Val Leu  
5285 5290 5295

Gln Ala Val Gly Ala Cys Val Leu Cys Asn Ser Gln Thr Ser Leu Arg  
5300 5305 5310

Cys Gly Ala Cys Ile Arg Arg Pro Phe Leu Cys Cys Lys Cys Cys Tyr  
5315 5320 5325

Asp His Val Ile Ser Thr Ser His Lys Leu Val Leu Ser Val Asn Pro  
5330 5335 5340

Tyr Val Cys Asn Ala Pro Gly Cys Asp Val Thr Asp Val Thr Gln Leu  
5345 5350 5355 5360

Tyr Leu Gly Gly Met Ser Tyr Tyr Cys Lys Ser His Lys Pro Pro Ile  
5365 5370 5375

Ser Phe Pro Leu Cys Ala Asn Gly Gln Val Phe Gly Leu Tyr Lys Asn  
5380 5385 5390

Thr Cys Val Gly Ser Asp Asn Val Thr Asp Phe Asn Ala Ile Ala Thr  
5395 5400 5405

Cys Asp Trp Thr Asn Ala Gly Asp Tyr Ile Leu Ala Asn Thr Cys Thr  
5410 5415 5420

Glu Arg Leu Lys Leu Phe Ala Ala Glu Thr Leu Lys Ala Thr Glu Glu  
5425 5430 5435 5440

Thr Phe Lys Leu Ser Tyr Gly Ile Ala Thr Val Arg Glu Val Leu Ser  
5445 5450 5455

Asp Arg Glu Leu His Leu Ser Trp Glu Val Gly Lys Pro Arg Pro Pro  
5460 5465 5470

Leu Asn Arg Asn Tyr Val Phe Thr Gly Tyr Arg Val Thr Lys Asn Ser  
5475 5480 5485

Lys Val Gln Ile Gly Glu Tyr Thr Phe Glu Lys Gly Asp Tyr Gly Asp  
5490 5495 5500

Ala Val Val Tyr Arg Gly Thr Thr Thr Tyr Lys Leu Asn Val Gly Asp  
5505 5510 5515 5520

Tyr Phe Val Leu Thr Ser His Thr Val Met Pro Leu Ser Ala Pro Thr  
5525 5530 5535

Leu Val Pro Gln Glu His Tyr Val Arg Ile Thr Gly Leu Tyr Pro Thr  
5540 5545 5550

SEQLIST-20480.TXT

Leu Asn Ile Ser Asp Glu Phe Ser Ser Asn Val Ala Asn Tyr Gln Lys  
 5555 5560 5565  
 Val Gly Met Gln Lys Tyr Ser Thr Leu Gln Gly Pro Pro Gly Thr Gly  
 5570 5575 5580  
 Lys Ser His Phe Ala Ile Gly Leu Ala Leu Tyr Tyr Pro Ser Ala Arg  
 5585 5590 5595 5600  
 Ile Val Tyr Thr Ala Cys Ser His Ala Ala Val Asp Ala Leu Cys Glu  
 5605 5610 5615  
 Lys Ala Leu Lys Tyr Leu Pro Ile Asp Lys Cys Ser Arg Ile Ile Pro  
 5620 5625 5630  
 Ala Arg Ala Arg Val Glu Cys Phe Asp Lys Phe Lys Val Asn Ser Thr  
 5635 5640 5645  
 Leu Glu Gln Tyr Val Phe Cys Thr Val Asn Ala Leu Pro Glu Thr Thr  
 5650 5655 5660  
 Ala Asp Ile Val Val Phe Asp Glu Ile Ser Met Ala Thr Asn Tyr Asp  
 5665 5670 5675 5680  
 Leu Ser Val Val Asn Ala Arg Leu Arg Ala Lys His Tyr Val Tyr Ile  
 5685 5690 5695  
 Gly Asp Pro Ala Gln Leu Pro Ala Pro Arg Thr Leu Leu Thr Lys Gly  
 5700 5705 5710  
 Thr Leu Glu Pro Glu Tyr Phe Asn Ser Val Cys Arg Leu Met Lys Thr  
 5715 5720 5725  
 Ile Gly Pro Asp Met Phe Leu Gly Thr Cys Arg Arg Cys Pro Ala Glu  
 5730 5735 5740  
 Ile Val Asp Thr Val Ser Ala Leu Val Tyr Asp Asn Lys Leu Lys Ala  
 5745 5750 5755 5760  
 His Lys Asp Lys Ser Ala Gln Cys Phe Lys Met Phe Tyr Lys Gly Val  
 5765 5770 5775  
 Ile Thr His Asp Val Ser Ser Ala Ile Asn Arg Pro Gln Ile Gly Val  
 5780 5785 5790  
 Val Arg Glu Phe Leu Thr Arg Asn Pro Ala Trp Arg Lys Ala Val Phe  
 5795 5800 5805  
 Ile Ser Pro Tyr Asn Ser Gln Asn Ala Val Ala Ser Lys Ile Leu Gly  
 5810 5815 5820  
 Leu Pro Thr Gln Thr Val Asp Ser Ser Gln Gly Ser Glu Tyr Asp Tyr  
 5825 5830 5835 5840  
 Val Ile Phe Thr Gln Thr Thr Glu Thr Ala His Ser Cys Asn Val Asn  
 5845 5850 5855  
 Arg Phe Asn Val Ala Ile Thr Arg Ala Lys Ile Gly Ile Leu Cys Ile  
 5860 5865 5870  
 Met Ser Asp Arg Asp Leu Tyr Asp Lys Leu Gln Phe Thr Ser Leu Glu  
 5875 5880 5885

SEQLIST-20480.TXT

Ile Pro Arg Arg Asn Val Ala Thr Leu Gln Ala Glu Asn Val Thr Gly  
5890 5895 5900

Leu Phe Lys Asp Cys Ser Lys Ile Ile Thr Gly Leu His Pro Thr Gln  
5905 5910 5915 5920

Ala Pro Thr His Leu Ser Val Asp Ile Lys Phe Lys Thr Glu Gly Leu  
5925 5930 5935

Cys Val Asp Ile Pro Gly Ile Pro Lys Asp Met Thr Tyr Arg Arg Leu  
5940 5945 5950

Ile Ser Met Met Gly Phe Lys Met Asn Tyr Gln Val Asn Gly Tyr Pro  
5955 5960 5965

Asn Met Phe Ile Thr Arg Glu Glu Ala Ile Arg His Val Arg Ala Trp  
5970 5975 5980

Ile Gly Phe Asp Val Glu Gly Cys His Ala Thr Arg Asp Ala Val Gly  
5985 5990 5995 6000

Thr Asn Leu Pro Leu Gln Leu Gly Phe Ser Thr Gly Val Asn Leu Val  
6005 6010 6015

Ala Val Pro Thr Gly Tyr Val Asp Thr Glu Asn Asn Thr Glu Phe Thr  
6020 6025 6030

Arg Val Asn Ala Lys Pro Pro Pro Gly Asp Gln Phe Lys His Leu Ile  
6035 6040 6045

Pro Leu Met Tyr Lys Gly Leu Pro Trp Asn Val Val Arg Ile Lys Ile  
6050 6055 6060

Val Gln Met Leu Ser Asp Thr Leu Lys Gly Leu Ser Asp Arg Val Val  
6065 6070 6075 6080

Phe Val Leu Trp Ala His Gly Phe Glu Leu Thr Ser Met Lys Tyr Phe  
6085 6090 6095

Val Lys Ile Gly Pro Glu Arg Thr Cys Cys Leu Cys Asp Lys Arg Ala  
6100 6105 6110

Thr Cys Phe Ser Thr Ser Ser Asp Thr Tyr Ala Cys Trp Asn His Ser  
6115 6120 6125

Val Gly Phe Asp Tyr Val Tyr Asn Pro Phe Met Ile Asp Val Gln Gln  
6130 6135 6140

Trp Gly Phe Thr Gly Asn Leu Gln Ser Asn His Asp Gln His Cys Gln  
6145 6150 6155 6160

Val His Gly Asn Ala His Val Ala Ser Cys Asp Ala Ile Met Thr Arg  
6165 6170 6175

Cys Leu Ala Val His Glu Cys Phe Val Lys Arg Val Asp Trp Ser Val  
6180 6185 6190

Glu Tyr Pro Ile Ile Gly Asp Glu Leu Arg Val Asn Ser Ala Cys Arg  
6195 6200 6205

Lys Val Gln His Met Val Val Lys Ser Ala Leu Leu Ala Asp Lys Phe  
6210 6215 6220



SEQLIST-20480.TXT

Pro Val Leu His Asp Ile Gly Asn Pro Lys Ala Ile Lys Cys Val Pro  
6225 6230 6235 6240

Gln Ala Glu Val Glu Trp Lys Phe Tyr Asp Ala Gln Pro Cys Ser Asp  
6245 6250 6255

Lys Ala Tyr Lys Ile Glu Glu Leu Phe Tyr Ser Tyr Ala Thr His His  
6260 6265 6270

Asp Lys Phe Thr Asp Gly Val Cys Leu Phe Trp Asn Cys Asn Val Asp  
6275 6280 6285

Arg Tyr Pro Ala Asn Ala Ile Val Cys Arg Phe Asp Thr Arg Val Leu  
6290 6295 6300

Ser Asn Leu Asn Leu Pro Gly Cys Asp Gly Gly Ser Leu Tyr Val Asn  
6305 6310 6315 6320

Lys His Ala Phe His Thr Pro Ala Phe Asp Lys Ser Ala Phe Thr Asn  
6325 6330 6335

Leu Lys Gln Leu Pro Phe Phe Tyr Tyr Ser Asp Ser Pro Cys Glu Ser  
6340 6345 6350

His Gly Lys Gln Val Val Ser Asp Ile Asp Tyr Val Pro Leu Lys Ser  
6355 6360 6365

Ala Thr Cys Ile Thr Arg Cys Asn Leu Gly Gly Ala Val Cys Arg His  
6370 6375 6380

His Ala Asn Glu Tyr Arg Gln Tyr Leu Asp Ala Tyr Asn Met Met Ile  
6385 6390 6395 6400

Ser Ala Gly Phe Ser Leu Trp Ile Tyr Lys Gln Phe Asp Thr Tyr Asn  
6405 6410 6415

Leu Trp Asn Thr Phe Thr Arg Leu Gln Ser Leu Glu Asn Val Ala Tyr  
6420 6425 6430

Asn Val Val Asn Lys Gly His Phe Asp Gly His Ala Gly Glu Ala Pro  
6435 6440 6445

Val Ser Ile Ile Asn Asn Ala Val Tyr Thr Lys Val Asp Gly Ile Asp  
6450 6455 6460

Val Glu Ile Phe Glu Asn Lys Thr Thr Leu Pro Val Asn Val Ala Phe  
6465 6470 6475 6480

Glu Leu Trp Ala Lys Arg Asn Ile Lys Pro Val Pro Glu Ile Lys Ile  
6485 6490 6495

Leu Asn Asn Leu Gly Val Asp Ile Ala Ala Asn Thr Val Ile Trp Asp  
6500 6505 6510

Tyr Lys Arg Glu Ala Pro Ala His Val Ser Thr Ile Gly Val Cys Thr  
6515 6520 6525

Met Thr Asp Ile Ala Lys Lys Pro Thr Glu Ser Ala Cys Ser Ser Leu  
6530 6535 6540

Thr Val Leu Phe Asp Gly Arg Val Glu Gly Gln Val Asp Leu Phe Arg  
6545 6550 6555 6560

SEQLIST-20480.TXT

Asn Ala Arg Asn Gly Val Leu Ile Thr Glu Gly Ser Val Lys Gly Leu  
 6565 6570 6575  
 Thr Pro Ser Lys Gly Pro Ala Gln Ala Ser Val Asn Gly Val Thr Leu  
 6580 6585 6590  
 Ile Gly Glu Ser Val Lys Thr Gln Phe Asn Tyr Phe Lys Lys Val Asp  
 6595 6600 6605  
 Gly Ile Ile Gln Gln Leu Pro Glu Thr Tyr Phe Thr Gln Ser Arg Asp  
 6610 6615 6620  
 Leu Glu Asp Phe Lys Pro Arg Ser Gln Met Glu Thr Asp Phe Leu Glu  
 6625 6630 6635 6640  
 Leu Ala Met Asp Glu Phe Ile Gln Arg Tyr Lys Leu Glu Gly Tyr Ala  
 6645 6650 6655  
 Phe Glu His Ile Val Tyr Gly Asp Phe Ser His Gly Gln Leu Gly Gly  
 6660 6665 6670  
 Leu His Leu Met Ile Gly Leu Ala Lys Arg Ser Gln Asp Ser Pro Leu  
 6675 6680 6685  
 Lys Leu Glu Asp Phe Ile Pro Met Asp Ser Thr Val Lys Asn Tyr Phe  
 6690 6695 6700  
 Ile Thr Asp Ala Gln Thr Gly Ser Ser Lys Cys Val Cys Ser Val Ile  
 6705 6710 6715 6720  
 Asp Leu Leu Leu Asp Asp Phe Val Glu Ile Ile Lys Ser Gln Asp Leu  
 6725 6730 6735  
 Ser Val Ile Ser Lys Val Val Lys Val Thr Ile Asp Tyr Ala Glu Ile  
 6740 6745 6750  
 Ser Phe Met Leu Trp Cys Lys Asp Gly His Val Glu Thr Phe Tyr Pro  
 6755 6760 6765  
 Lys Leu Gln Ala Ser Arg Ala Trp Gln Pro Gly Val Ala Met Pro Asn  
 6770 6775 6780  
 Leu Tyr Lys Met Gln Arg Met Leu Leu Glu Lys Cys Asp Leu Gln Asn  
 6785 6790 6795 6800  
 Tyr Gly Glu Asn Ala Val Ile Pro Lys Gly Ile Met Met Asn Val Ala  
 6805 6810 6815  
 Lys Tyr Thr Gln Leu Cys Gln Tyr Leu Asn Thr Leu Thr Leu Ala Val  
 6820 6825 6830  
 Pro Tyr Asn Met Arg Val Ile His Phe Gly Ala Gly Ser Asp Lys Gly  
 6835 6840 6845  
 Val Ala Pro Gly Thr Ala Val Leu Arg Gln Trp Leu Pro Thr Gly Thr  
 6850 6855 6860  
 Leu Leu Val Asp Ser Asp Leu Asn Asp Phe Val Ser Asp Ala Tyr Ser  
 6865 6870 6875 6880  
 Thr Leu Ile Gly Asp Cys Ala Thr Val His Thr Ala Asn Lys Trp Asp  
 6885 6890 6895

SEQLIST-20480.TXT

Leu Ile Ile Ser Asp Met Tyr Asp Pro Arg Thr Lys His Val Thr Lys  
6900 6905 6910

Glu Asn Asp Ser Lys Glu Gly Phe Phe Thr Tyr Leu Cys Gly Phe Ile  
6915 6920 6925

Lys Gln Lys Leu Ala Leu Gly Gly Ser Ile Ala Val Lys Ile Thr Glu  
6930 6935 6940

His Ser Trp Asn Ala Asp Leu Tyr Lys Leu Met Gly His Phe Ser Trp  
6945 6950 6955 6960

Trp Thr Ala Phe Val Thr Asn Val Asn Ala Ser Ser Ser Glu Ala Phe  
6965 6970 6975

Leu Ile Gly Ala Asn Tyr Leu Gly Lys Pro Lys Glu Gln Ile Asp Gly  
6980 6985 6990

Tyr Thr Met His Ala Asn Tyr Ile Phe Trp Arg Asn Thr Asn Pro Ile  
6995 7000 7005

Gln Leu Ser Ser Tyr Ser Leu Phe Asp Met Ser Lys Phe Pro Leu Lys  
7010 7015 7020

Leu Arg Gly Thr Ala Val Met Ser Leu Lys Glu Asn Gln Ile Asn Asp  
7025 7030 7035 7040

Met Ile Tyr Ser Leu Leu Glu Lys Gly Arg Leu Ile Ile Arg Glu Asn  
7045 7050 7055

Asn Arg Val Val Val Ser Ser Asp Ile Leu Val Asn Asn  
7060 7065

<210> 7250  
<211> 7070  
<212> PRT  
<213> SARS coronavirus

<400> 7250  
Met Glu Ser Leu Val Leu Gly Val Asn Glu Lys Thr His Val Gln Leu  
1 5 10 15

Ser Leu Pro Val Leu Gln Val Arg Asp Val Leu Val Arg Gly Phe Gly  
20 25 30

Asp Ser Val Glu Glu Ala Leu Ser Glu Ala Arg Glu His Leu Lys Asn  
35 40 45

Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val Leu Pro Gln Leu  
50 55 60

Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala Leu Ser Thr Asn  
65 70 75 80

His Gly His Lys Val Val Glu Leu Val Ala Glu Met Asp Gly Ile Gln  
85 90 95

Tyr Gly Arg Ser Gly Ile Thr Leu Gly Val Leu Val Pro His Val Gly  
100 105 110

Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg Lys Asn Gly Asn  
115 120 125

SEQLIST-20480.TXT

Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu Lys Ser Tyr Asp  
 130 135 140  
 Leu Gly Asp Glu Leu Gly Thr Asp Pro Ile Glu Asp Tyr Glu Gln Asn  
 145 150 155 160  
 Trp Asn Thr Lys His Gly Ser Gly Ala Leu Arg Glu Leu Thr Arg Glu  
 165 170 175  
 Leu Asn Gly Gly Ala Val Thr Arg Tyr Val Asp Asn Asn Phe Cys Gly  
 180 185 190  
 Pro Asp Gly Tyr Pro Leu Asp Cys Ile Lys Asp Phe Leu Ala Arg Ala  
 195 200 205  
 Gly Lys Ser Met Cys Thr Leu Ser Glu Gln Leu Asp Tyr Ile Glu Ser  
 210 215 220  
 Lys Arg Gly Val Tyr Cys Cys Arg Asp His Glu His Glu Ile Ala Trp  
 225 230 235 240  
 Phe Thr Glu Arg Ser Asp Lys Ser Tyr Glu His Gln Thr Pro Phe Glu  
 245 250 255  
 Ile Lys Ser Ala Lys Lys Phe Asp Thr Phe Lys Gly Glu Cys Pro Lys  
 260 265 270  
 Phe Val Phe Pro Leu Asn Ser Lys Val Lys Val Ile Gln Pro Arg Val  
 275 280 285  
 Glu Lys Lys Lys Thr Glu Gly Phe Met Gly Arg Ile Arg Ser Val Tyr  
 290 295 300  
 Pro Val Ala Ser Pro Gln Glu Cys Asn Asn Met His Leu Ser Thr Leu  
 305 310 315 320  
 Met Lys Cys Asn His Cys Asp Glu Val Ser Trp Gln Thr Cys Asp Phe  
 325 330 335  
 Leu Lys Ala Thr Cys Glu His Cys Gly Thr Glu Asn Leu Val Ile Glu  
 340 345 350  
 Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met  
 355 360 365  
 Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val  
 370 375 380  
 Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly  
 385 390 395 400  
 Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys  
 405 410 415  
 Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly  
 420 425 430  
 Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu  
 435 440 445  
 Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val  
 450 455 460

SEQLIST-20480.TXT

Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe  
465 470 475 480  
Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr  
485 490 495  
Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr  
500 505 510  
Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser  
515 520 525  
Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala Ala Gly Val Ile  
530 535 540  
Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pro  
545 550 555 560  
Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln  
565 570 575  
Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser Asp Leu Leu Thr  
580 585 590  
Asn Ser Val Ile Ile Met Ala Tyr Val Thr Gly Gly Leu Val Gln Gln  
595 600 605  
Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr Val Glu Lys Leu  
610 615 620  
Arg Pro Ile Phe Glu Trp Ile Glu Ala Lys Leu Ser Ala Gly Val Glu  
625 630 635 640  
Phe Leu Lys Asp Ala Trp Glu Ile Leu Lys Phe Leu Ile Thr Gly Val  
645 650 655  
Phe Asp Ile Val Lys Gly Gln Ile Gln Val Ala Ser Asp Asn Ile Lys  
660 665 670  
Asp Cys Val Lys Cys Phe Ile Asp Val Val Asn Lys Ala Leu Glu Met  
675 680 685  
Cys Ile Asp Gln Val Thr Ile Ala Gly Ala Lys Leu Arg Ser Leu Asn  
690 695 700  
Leu Gly Glu Val Phe Ile Ala Gln Ser Lys Gly Leu Tyr Arg Gln Cys  
705 710 715 720  
Ile Arg Gly Lys Glu Gln Leu Gln Leu Leu Met Pro Leu Lys Ala Pro  
725 730 735  
Lys Glu Val Thr Phe Leu Glu Gly Asp Ser His Asp Thr Val Leu Thr  
740 745 750  
Ser Glu Glu Val Val Leu Lys Asn Gly Glu Leu Glu Ala Leu Glu Thr  
755 760 765  
Pro Val Asp Ser Phe Thr Asn Gly Ala Ile Val Gly Thr Pro Val Cys  
770 775 780  
Val Asn Gly Leu Met Leu Leu Glu Ile Lys Asp Lys Glu Gln Tyr Cys  
785 790 795 800

SEQLIST-20480.TXT

Ala Leu Ser Pro Gly Leu Leu Ala Thr Asn Asn Val Phe Arg Leu Lys  
805 810 815

Gly Gly Ala Pro Ile Lys Gly Val Thr Phe Gly Glu Asp Thr Val Trp  
820 825 830

Glu Val Gln Gly Tyr Lys Asn Val Arg Ile Thr Phe Glu Leu Asp Glu  
835 840 845

Arg Val Asp Lys Val Leu Asn Glu Lys Cys Ser Val Tyr Thr Val Glu  
850 855 860

Ser Gly Thr Glu Val Thr Glu Phe Ala Cys Val Val Ala Glu Ala Val  
865 870 875 880

Val Lys Thr Leu Gln Pro Val Ser Asp Leu Leu Thr Asn Met Gly Ile  
885 890 895

Asp Leu Asp Glu Trp Ser Val Ala Thr Phe Tyr Leu Phe Asp Asp Ala  
900 905 910

Gly Glu Glu Asn Phe Ser Ser Arg Met Tyr Cys Ser Phe Tyr Pro Pro  
915 920 925

Asp Glu Glu Glu Glu Asp Asp Ala Glu Cys Glu Glu Glu Glu Ile Asp  
930 935 940

Glu Thr Cys Glu His Glu Tyr Gly Thr Glu Asp Asp Tyr Gln Gly Leu  
945 950 955 960

Pro Leu Glu Phe Gly Ala Ser Ala Glu Thr Val Arg Val Glu Glu Glu  
965 970 975

Glu Glu Glu Asp Trp Leu Asp Asp Thr Thr Glu Gln Ser Glu Ile Glu  
980 985 990

Pro Glu Pro Glu Pro Thr Pro Glu Glu Pro Val Asn Gln Phe Thr Gly  
995 1000 1005

Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Ile Val  
1010 1015 1020

Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala Ala Asn  
1025 1030 1035 1040

Ile His Leu Lys His Gly Gly Gly Val Ala Gly Ala Leu Asn Lys Ala  
1045 1050 1055

Thr Asn Gly Ala Met Gln Lys Glu Ser Asp Asp Tyr Ile Lys Leu Asn  
1060 1065 1070

Gly Pro Leu Thr Val Gly Gly Ser Cys Leu Leu Ser Gly His Asn Leu  
1075 1080 1085

Ala Lys Lys Cys Leu His Val Val Gly Pro Asn Leu Asn Ala Gly Glu  
1090 1095 1100

Asp Ile Gln Leu Leu Lys Ala Ala Tyr Glu Asn Phe Asn Ser Gln Asp  
1105 1110 1115 1120

Ile Leu Leu Ala Pro Leu Leu Ser Ala Gly Ile Phe Gly Ala Lys Pro  
1125 1130 1135

SEQLIST-20480.TXT

Leu Gln Ser Leu Gln Val Cys Val Gln Thr Val Arg Thr Gln Val Tyr  
1140 1145 1150

Ile Ala Val Asn Asp Lys Ala Leu Tyr Glu Gln Val Val Met Asp Tyr  
1155 1160 1165

Leu Asp Asn Leu Lys Pro Arg Val Glu Ala Pro Lys Gln Glu Glu Pro  
1170 1175 1180

Pro Asn Thr Glu Asp Ser Lys Thr Glu Glu Lys Ser Val Val Gln Lys  
1185 1190 1195 1200

Pro Val Asp Val Lys Pro Lys Ile Lys Ala Cys Ile Asp Glu Val Thr  
1205 1210 1215

Thr Thr Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys Leu Leu Leu Phe  
1220 1225 1230

Ala Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln Asn Met Leu Arg  
1235 1240 1245

Gly Glu Asp Met Ser Phe Leu Glu Lys Asp Ala Pro Tyr Met Val Gly  
1250 1255 1260

Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val Ile Pro Ser Lys  
1265 1270 1275 1280

Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala Leu Lys Lys Val  
1285 1290 1295

Pro Val Asp Glu Tyr Ile Thr Thr Tyr Pro Gly Gln Gly Cys Ala Gly  
1300 1305 1310

Tyr Thr Leu Glu Glu Ala Lys Thr Ala Leu Lys Lys Cys Lys Ser Ala  
1315 1320 1325

Phe Tyr Val Leu Pro Ser Glu Ala Pro Asn Ala Lys Glu Glu Ile Leu  
1330 1335 1340

Gly Thr Val Ser Trp Asn Leu Arg Glu Met Leu Ala His Ala Glu Glu  
1345 1350 1355 1360

Thr Arg Lys Leu Met Pro Ile Cys Met Asp Val Arg Ala Ile Met Ala  
1365 1370 1375

Thr Ile Gln Arg Lys Tyr Lys Gly Ile Lys Ile Gln Glu Gly Ile Val  
1380 1385 1390

Asp Tyr Gly Val Arg Phe Phe Phe Tyr Thr Ser Lys Glu Pro Val Ala  
1395 1400 1405

Ser Ile Ile Thr Lys Leu Asn Ser Leu Asn Glu Pro Leu Val Thr Met  
1410 1415 1420

Pro Ile Gly Tyr Val Thr His Gly Phe Asn Leu Glu Glu Ala Ala Arg  
1425 1430 1435 1440

Cys Met Arg Ser Leu Lys Ala Pro Ala Val Val Ser Val Ser Ser Pro  
1445 1450 1455

Asp Ala Val Thr Thr Tyr Asn Gly Tyr Leu Thr Ser Ser Ser Lys Thr  
1460 1465 1470

SEQLIST-20480.TXT

Ser Glu Glu His Phe Val Glu Thr Val Ser Leu Ala Gly Ser Tyr Arg  
1475 1480 1485

Asp Trp Ser Tyr Ser Gly Gln Arg Thr Glu Leu Gly Val Glu Phe Leu  
1490 1495 1500

Lys Arg Gly Asp Lys Ile Val Tyr His Thr Leu Glu Ser Pro Val Glu  
1505 1510 1515 1520

Phe His Leu Asp Gly Glu Val Leu Ser Leu Asp Lys Leu Lys Ser Leu  
1525 1530 1535

Leu Ser Leu Arg Glu Val Lys Thr Ile Lys Val Phe Thr Thr Val Asp  
1540 1545 1550

Asn Thr Asn Leu His Thr Gln Leu Val Asp Met Ser Met Thr Tyr Gly  
1555 1560 1565

Gln Gln Phe Gly Pro Thr Tyr Leu Asp Gly Ala Asp Val Thr Lys Ile  
1570 1575 1580

Lys Pro His Val Asn His Glu Gly Lys Thr Phe Phe Val Leu Pro Ser  
1585 1590 1595 1600

Asp Asp Thr Leu Arg Ser Glu Ala Phe Glu Tyr Tyr His Thr Leu Asp  
1605 1610 1615

Glu Ser Phe Leu Gly Arg Tyr Met Ser Ala Leu Asn His Thr Lys Lys  
1620 1625 1630

Trp Lys Phe Pro Gln Val Gly Gly Leu Thr Ser Ile Lys Trp Ala Asp  
1635 1640 1645

Asn Asn Cys Tyr Leu Ser Ser Val Leu Leu Ala Leu Gln Gln Leu Glu  
1650 1655 1660

Val Lys Phe Asn Ala Pro Ala Leu Gln Glu Ala Tyr Tyr Arg Ala Arg  
1665 1670 1675 1680

Ala Gly Asp Ala Ala Asn Phe Cys Ala Leu Ile Leu Ala Tyr Ser Asn  
1685 1690 1695

Lys Thr Val Gly Glu Leu Gly Asp Val Arg Glu Thr Met Thr His Leu  
1700 1705 1710

Leu Gln His Ala Asn Leu Glu Ser Ala Lys Arg Val Leu Asn Val Val  
1715 1720 1725

Cys Lys His Cys Gly Gln Lys Thr Thr Thr Leu Thr Gly Val Glu Ala  
1730 1735 1740

Val Met Tyr Met Gly Thr Leu Ser Tyr Asp Asn Leu Lys Thr Gly Val  
1745 1750 1755 1760

Ser Ile Pro Cys Val Cys Gly Arg Asp Ala Thr Gln Tyr Leu Val Gln  
1765 1770 1775

Gln Glu Ser Ser Phe Val Met Met Ser Ala Pro Pro Ala Glu Tyr Lys  
1780 1785 1790

Leu Gln Gln Gly Thr Phe Leu Cys Ala Asn Glu Tyr Thr Gly Asn Tyr  
1795 1800 1805



SEQLIST-20480.TXT

Gln Cys Gly His Tyr Thr His Ile Thr Ala Lys Glu Thr Leu Tyr Arg  
1810 1815 1820

Ile Asp Gly Ala His Leu Thr Lys Met Ser Glu Tyr Lys Gly Pro Val  
1825 1830 1835 1840

Thr Asp Val Phe Tyr Lys Glu Thr Ser Tyr Thr Thr Thr Ile Lys Pro  
1845 1850 1855

Val Ser Tyr Lys Leu Asp Gly Val Thr Tyr Thr Glu Ile Glu Pro Lys  
1860 1865 1870

Leu Asp Gly Tyr Tyr Lys Lys Asp Asn Ala Tyr Tyr Thr Glu Gln Pro  
1875 1880 1885

Ile Asp Leu Val Pro Thr Gln Pro Leu Pro Asn Ala Ser Phe Asp Asn  
1890 1895 1900

Phe Lys Leu Thr Cys Ser Asn Thr Lys Phe Ala Asp Asp Leu Asn Gln  
1905 1910 1915 1920

Met Thr Gly Phe Thr Lys Pro Ala Ser Arg Glu Leu Ser Val Thr Phe  
1925 1930 1935

Phe Pro Asp Leu Asn Gly Asp Val Val Ala Ile Asp Tyr Arg His Tyr  
1940 1945 1950

Ser Ala Ser Phe Lys Lys Gly Ala Lys Leu Leu His Lys Pro Ile Val  
1955 1960 1965

Trp His Ile Asn Gln Ala Thr Thr Lys Thr Thr Phe Lys Pro Asn Thr  
1970 1975 1980

Trp Cys Leu Arg Cys Leu Trp Ser Thr Lys Pro Val Asp Thr Ser Asn  
1985 1990 1995 2000

Ser Phe Glu Val Leu Ala Val Glu Asp Thr Gln Gly Met Asp Asn Leu  
2005 2010 2015

Ala Cys Glu Ser Gln Gln Pro Thr Ser Glu Glu Val Val Glu Asn Pro  
2020 2025 2030

Thr Ile Gln Lys Glu Val Ile Glu Cys Asp Val Lys Thr Thr Glu Val  
2035 2040 2045

Val Gly Asn Val Ile Leu Lys Pro Ser Asp Glu Gly Val Lys Val Thr  
2050 2055 2060

Gln Glu Leu Gly His Glu Asp Leu Met Ala Ala Tyr Val Glu Asn Thr  
2065 2070 2075 2080

Ser Ile Thr Ile Lys Lys Pro Asn Glu Leu Ser Leu Ala Leu Gly Leu  
2085 2090 2095

Lys Thr Ile Ala Thr His Gly Ile Ala Ala Ile Asn Ser Val Pro Trp  
2100 2105 2110

Ser Lys Ile Leu Ala Tyr Val Lys Pro Phe Leu Gly Gln Ala Ala Ile  
2115 2120 2125

Thr Thr Ser Asn Cys Ala Lys Arg Leu Ala Gln Arg Val Phe Asn Asn  
2130 2135 2140

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Tyr Met Pro Tyr Val Phe Thr Leu Leu Phe Gln Leu Cys Thr Phe Thr  
 2145 2150 2155 2160  
 Lys Ser Thr Asn Ser Arg Ile Arg Ala Ser Leu Pro Thr Thr Ile Ala  
 2165 2170 2175  
 Lys Asn Ser Val Lys Ser Val Ala Lys Leu Cys Leu Asp Ala Gly Ile  
 2180 2185 2190  
 Asn Tyr Val Lys Ser Pro Lys Phe Ser Lys Leu Phe Thr Ile Ala Met  
 2195 2200 2205  
 Trp Leu Leu Leu Leu Ser Ile Cys Leu Gly Ser Leu Ile Cys Val Thr  
 2210 2215 2220  
 Ala Ala Phe Gly Val Leu Leu Ser Asn Phe Gly Ala Pro Ser Tyr Cys  
 2225 2230 2235 2240  
 Asn Gly Val Arg Glu Leu Tyr Leu Asn Ser Ser Asn Val Thr Thr Met  
 2245 2250 2255  
 Asp Phe Cys Glu Gly Ser Phe Pro Cys Ser Ile Cys Leu Ser Gly Leu  
 2260 2265 2270  
 Asp Ser Leu Asp Ser Tyr Pro Ala Leu Glu Thr Ile Gln Val Thr Ile  
 2275 2280 2285  
 Ser Ser Tyr Lys Leu Asp Leu Thr Ile Leu Gly Leu Ala Ala Glu Trp  
 2290 2295 2300  
 Val Leu Ala Tyr Met Leu Phe Thr Lys Phe Phe Tyr Leu Leu Gly Leu  
 2305 2310 2315 2320  
 Ser Ala Ile Met Gln Val Phe Phe Gly Tyr Phe Ala Ser His Phe Ile  
 2325 2330 2335  
 Ser Asn Ser Trp Leu Met Trp Phe Ile Ile Ser Ile Val Gln Met Ala  
 2340 2345 2350  
 Pro Val Ser Ala Met Val Arg Met Tyr Ile Phe Phe Ala Ser Phe Tyr  
 2355 2360 2365  
 Tyr Ile Trp Lys Ser Tyr Val His Ile Met Asp Gly Cys Thr Ser Ser  
 2370 2375 2380  
 Thr Cys Met Met Cys Tyr Lys Arg Asn Arg Ala Thr Arg Val Glu Cys  
 2385 2390 2395 2400  
 Thr Thr Ile Val Asn Gly Met Lys Arg Ser Phe Tyr Val Tyr Ala Asn  
 2405 2410 2415  
 Gly Gly Arg Gly Phe Cys Lys Thr His Asn Trp Asn Cys Leu Asn Cys  
 2420 2425 2430  
 Asp Thr Phe Cys Thr Gly Ser Thr Phe Ile Ser Asp Glu Val Ala Arg  
 2435 2440 2445  
 Asp Leu Ser Leu Gln Phe Lys Arg Pro Ile Asn Pro Thr Asp Gln Ser  
 2450 2455 2460  
 Ser Tyr Ile Val Asp Ser Val Ala Val Lys Asn Gly Ala Leu His Leu  
 2465 2470 2475 2480

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Tyr Phe Asp Lys Ala Gly Gln Lys Thr Tyr Glu Arg His Pro Leu Ser  
 2485 2490 2495  
 His Phe Val Asn Leu Asp Asn Leu Arg Ala Asn Asn Thr Lys Gly Ser  
 2500 2505 2510  
 Leu Pro Ile Asn Val Ile Val Phe Asp Gly Lys Ser Lys Cys Asp Glu  
 2515 2520 2525  
 Ser Ala Ser Lys Ser Ala Ser Val Tyr Tyr Ser Gln Leu Met Cys Gln  
 2530 2535 2540  
 Pro Ile Leu Leu Leu Asp Gln Ala Leu Val Ser Asp Val Gly Asp Ser  
 2545 2550 2555 2560  
 Thr Glu Val Ser Val Lys Met Phe Asp Ala Tyr Val Asp Thr Phe Ser  
 2565 2570 2575  
 Ala Thr Phe Ser Val Pro Met Glu Lys Leu Lys Ala Leu Val Ala Thr  
 2580 2585 2590  
 Ala His Ser Glu Leu Ala Lys Gly Val Ala Leu Asp Gly Val Leu Ser  
 2595 2600 2605  
 Thr Phe Val Ser Ala Ala Arg Gln Gly Val Val Asp Thr Asp Val Asp  
 2610 2615 2620  
 Thr Lys Asp Val Ile Glu Cys Leu Lys Leu Ser His His Ser Asp Leu  
 2625 2630 2635 2640  
 Glu Val Thr Gly Asp Ser Cys Asn Asn Phe Met Leu Thr Tyr Asn Lys  
 2645 2650 2655  
 Val Glu Asn Met Thr Pro Arg Asp Leu Gly Ala Cys Ile Asp Cys Asn  
 2660 2665 2670  
 Ala Arg His Ile Asn Ala Gln Val Ala Lys Ser His Asn Val Ser Leu  
 2675 2680 2685  
 Ile Trp Asn Val Lys Asp Tyr Met Ser Leu Ser Glu Gln Leu Arg Lys  
 2690 2695 2700  
 Gln Ile Arg Ser Ala Ala Lys Lys Asn Asn Ile Pro Phe Arg Leu Thr  
 2705 2710 2715 2720  
 Cys Ala Thr Thr Arg Gln Val Val Asn Val Ile Thr Thr Lys Ile Ser  
 2725 2730 2735  
 Leu Lys Gly Gly Lys Ile Val Ser Thr Cys Phe Lys Leu Met Leu Lys  
 2740 2745 2750  
 Ala Thr Leu Leu Cys Val Leu Ala Ala Leu Val Cys Tyr Ile Val Met  
 2755 2760 2765  
 Pro Val His Thr Leu Ser Ile His Asp Gly Tyr Thr Asn Glu Ile Ile  
 2770 2775 2780  
 Gly Tyr Lys Ala Ile Gln Asp Gly Val Thr Arg Asp Ile Ile Ser Thr  
 2785 2790 2795 2800  
 Asp Asp Cys Phe Ala Asn Lys His Ala Gly Phe Asp Ala Trp Phe Ser  
 2805 2810 2815

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Gln Arg Gly Gly Ser Tyr Lys Asn Asp Lys Ser Cys Pro Val Val Ala  
2820 2825 2830

Ala Ile Ile Thr Arg Glu Ile Gly Phe Ile Val Pro Gly Leu Pro Gly  
2835 2840 2845

Thr Val Leu Arg Ala Ile Asn Gly Asp Phe Leu His Phe Leu Pro Arg  
2850 2855 2860

Val Phe Ser Ala Val Gly Asn Ile Cys Tyr Thr Pro Ser Lys Leu Ile  
2865 2870 2875 2880

Glu Tyr Ser Asp Phe Ala Thr Ser Ala Cys Val Leu Ala Ala Glu Cys  
2885 2890 2895

Thr Ile Phe Lys Asp Ala Met Gly Lys Pro Val Pro Tyr Cys Tyr Asp  
2900 2905 2910

Thr Asn Leu Leu Glu Gly Ser Ile Ser Tyr Ser Glu Leu Arg Pro Asp  
2915 2920 2925

Thr Arg Tyr Val Leu Met Asp Gly Ser Ile Ile Gln Phe Pro Asn Thr  
2930 2935 2940

Tyr Leu Glu Gly Ser Val Arg Val Val Thr Thr Phe Asp Ala Glu Tyr  
2945 2950 2955 2960

Cys Arg His Gly Thr Cys Glu Arg Ser Glu Val Gly Ile Cys Leu Ser  
2965 2970 2975

Thr Ser Gly Arg Trp Val Leu Asn Asn Glu His Tyr Arg Ala Leu Ser  
2980 2985 2990

Gly Val Phe Cys Gly Val Asp Ala Met Asn Leu Ile Ala Asn Ile Phe  
2995 3000 3005

Thr Pro Leu Val Gln Pro Val Gly Ala Leu Asp Val Ser Ala Ser Val  
3010 3015 3020

Val Ala Gly Gly Ile Ile Ala Ile Leu Val Thr Cys Ala Ala Tyr Tyr  
3025 3030 3035 3040

Phe Met Lys Phe Arg Arg Val Phe Gly Glu Tyr Asn His Val Val Ala  
3045 3050 3055

Ala Asn Ala Leu Leu Phe Leu Met Ser Phe Thr Ile Leu Cys Leu Val  
3060 3065 3070

Pro Ala Tyr Ser Phe Leu Pro Gly Val Tyr Ser Val Phe Tyr Leu Tyr  
3075 3080 3085

Leu Thr Phe Tyr Phe Thr Asn Asp Val Ser Phe Leu Ala His Leu Gln  
3090 3095 3100

Trp Phe Ala Met Phe Ser Pro Ile Val Pro Phe Trp Ile Thr Ala Ile  
3105 3110 3115 3120

Tyr Val Phe Cys Ile Ser Leu Lys His Cys His Trp Phe Phe Asn Asn  
3125 3130 3135

Tyr Leu Arg Lys Arg Val Met Phe Asn Gly Val Thr Phe Ser Thr Phe  
3140 3145 3150

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Glu Glu Ala Ala Leu Cys Thr Phe Leu Leu Asn Lys Glu Met Tyr Leu  
 3155 3160 3165  
 Lys Leu Arg Ser Glu Thr Leu Leu Pro Leu Thr Gln Tyr Asn Arg Tyr  
 3170 3175 3180  
 Leu Ala Leu Tyr Asn Lys Tyr Lys Tyr Phe Ser Gly Ala Leu Asp Thr  
 3185 3190 3195 3200  
 Thr Ser Tyr Arg Glu Ala Ala Cys Cys His Leu Ala Lys Ala Leu Asn  
 3205 3210 3215  
 Asp Phe Ser Asn Ser Gly Ala Asp Val Leu Tyr Gln Pro Pro Gln Thr  
 3220 3225 3230  
 Ser Ile Thr Ser Ala Val Leu Gln Ser Gly Phe Arg Lys Met Ala Phe  
 3235 3240 3245  
 Pro Ser Gly Lys Val Glu Gly Cys Met Val Gln Val Thr Cys Gly Thr  
 3250 3255 3260  
 Thr Thr Leu Asn Gly Leu Trp Leu Asp Asp Thr Val Tyr Cys Pro Arg  
 3265 3270 3275 3280  
 His Val Ile Cys Thr Ala Glu Asp Met Leu Asn Pro Asn Tyr Glu Asp  
 3285 3290 3295  
 Leu Leu Ile Arg Lys Ser Asn His Ser Phe Leu Val Gln Ala Gly Asn  
 3300 3305 3310  
 Val Gln Leu Arg Val Ile Gly His Ser Met Gln Asn Cys Leu Leu Arg  
 3315 3320 3325  
 Leu Lys Val Asp Thr Ser Asn Pro Lys Thr Pro Lys Tyr Lys Phe Val  
 3330 3335 3340  
 Arg Ile Gln Pro Gly Gln Thr Phe Ser Val Leu Ala Cys Tyr Asn Gly  
 3345 3350 3355 3360  
 Ser Pro Ser Gly Val Tyr Gln Cys Ala Met Arg Pro Asn His Thr Ile  
 3365 3370 3375  
 Lys Gly Ser Phe Leu Asn Gly Ser Cys Gly Ser Val Gly Phe Asn Ile  
 3380 3385 3390  
 Asp Tyr Asp Cys Val Ser Phe Cys Tyr Met His His Met Glu Leu Pro  
 3395 3400 3405  
 Thr Gly Val His Ala Gly Thr Asp Leu Glu Gly Lys Phe Tyr Gly Pro  
 3410 3415 3420  
 Phe Val Asp Arg Gln Thr Ala Gln Ala Ala Gly Thr Asp Thr Thr Ile  
 3425 3430 3435 3440  
 Thr Leu Asn Val Leu Ala Trp Leu Tyr Ala Ala Val Ile Asn Gly Asp  
 3445 3450 3455  
 Arg Trp Phe Leu Asn Arg Phe Thr Thr Thr Leu Asn Asp Phe Asn Leu  
 3460 3465 3470  
 Val Ala Met Lys Tyr Asn Tyr Glu Pro Leu Thr Gln Asp His Val Asp  
 3475 3480 3485

SEQLIST-20480.TXT

Ile Leu Gly Pro Leu Ser Ala Gln Thr Gly Ile Ala Val Leu Asp Met  
3490 3495 3500

Cys Ala Ala Leu Lys Glu Leu Leu Gln Asn Gly Met Asn Gly Arg Thr  
3505 3510 3515 3520

Ile Leu Gly Ser Thr Ile Leu Glu Asp Glu Phe Thr Pro Phe Asp Val  
3525 3530 3535

Val Arg Gln Cys Ser Gly Val Thr Phe Gln Gly Lys Phe Lys Lys Ile  
3540 3545 3550

Val Lys Gly Thr His His Trp Met Leu Leu Thr Phe Leu Thr Ser Leu  
3555 3560 3565

Leu Ile Leu Val Gln Ser Thr Gln Trp Ser Leu Phe Phe Phe Val Tyr  
3570 3575 3580

Glu Asn Ala Phe Leu Pro Phe Thr Leu Gly Ile Met Ala Ile Ala Ala  
3585 3590 3595 3600

Cys Ala Met Leu Leu Val Lys His Lys His Ala Phe Leu Cys Leu Phe  
3605 3610 3615

Leu Leu Pro Ser Leu Ala Thr Val Ala Tyr Phe Asn Met Val Tyr Met  
3620 3625 3630

Pro Ala Ser Trp Val Met Arg Ile Met Thr Trp Leu Glu Leu Ala Asp  
3635 3640 3645

Thr Ser Leu Ser Gly Tyr Arg Leu Lys Asp Cys Val Met Tyr Ala Ser  
3650 3655 3660

Ala Leu Val Leu Leu Ile Leu Met Thr Ala Arg Thr Val Tyr Asp Asp  
3665 3670 3675 3680

Ala Ala Arg Arg Val Trp Thr Leu Met Asn Val Ile Thr Leu Val Tyr  
3685 3690 3695

Lys Val Tyr Tyr Gly Asn Ala Leu Asp Gln Ala Ile Ser Met Trp Ala  
3700 3705 3710

Leu Val Ile Ser Val Thr Ser Asn Tyr Ser Gly Val Val Thr Thr Ile  
3715 3720 3725

Met Phe Leu Ala Arg Ala Ile Val Phe Val Cys Val Glu Tyr Tyr Pro  
3730 3735 3740

Leu Leu Phe Ile Thr Gly Asn Thr Leu Gln Cys Ile Met Leu Val Tyr  
3745 3750 3755 3760

Cys Phe Leu Gly Tyr Cys Cys Cys Cys Tyr Phe Gly Leu Phe Cys Leu  
3765 3770 3775

Leu Asn Arg Tyr Phe Arg Leu Thr Leu Gly Val Tyr Asp Tyr Leu Val  
3780 3785 3790

Ser Thr Gln Glu Phe Arg Tyr Met Asn Ser Gln Gly Leu Leu Pro Pro  
3795 3800 3805

Lys Ser Ser Ile Asp Ala Phe Lys Leu Asn Ile Lys Leu Leu Gly Ile  
3810 3815 3820

SEQLIST-20480.TXT

Gly Gly Lys Pro Cys Ile Lys Val Ala Thr Val Gln Ser Lys Met Ser  
3825 3830 3835 3840

Asp Val Lys Cys Thr Ser Val Val Leu Leu Ser Val Leu Gln Gln Leu  
3845 3850 3855

Arg Val Glu Ser Ser Ser Lys Leu Trp Ala Gln Cys Val Gln Leu His  
3860 3865 3870

Asn Asp Ile Leu Leu Ala Lys Asp Thr Thr Glu Ala Phe Glu Lys Met  
3875 3880 3885

Val Ser Leu Leu Ser Val Leu Leu Ser Met Gln Gly Ala Val Asp Ile  
3890 3895 3900

Asn Arg Leu Cys Glu Glu Met Leu Asp Asn Arg Ala Thr Leu Gln Ala  
3905 3910 3915 3920

Ile Ala Ser Glu Phe Ser Ser Leu Pro Ser Tyr Ala Ala Tyr Ala Thr  
3925 3930 3935

Ala Gln Glu Ala Tyr Glu Gln Ala Val Ala Asn Gly Asp Ser Glu Val  
3940 3945 3950

Val Leu Lys Lys Leu Lys Lys Ser Leu Asn Val Ala Lys Ser Glu Phe  
3955 3960 3965

Asp Arg Asp Ala Ala Met Gln Arg Lys Leu Glu Lys Met Ala Asp Gln  
3970 3975 3980

Ala Met Thr Gln Met Tyr Lys Gln Ala Arg Ser Glu Asp Lys Arg Ala  
3985 3990 3995 4000

Lys Val Thr Ser Ala Met Gln Thr Met Leu Phe Thr Met Leu Arg Lys  
4005 4010 4015

Leu Asp Asn Asp Ala Leu Asn Asn Ile Ile Asn Asn Ala Arg Asp Gly  
4020 4025 4030

Cys Val Pro Leu Asn Ile Ile Pro Leu Thr Thr Ala Ala Lys Leu Met  
4035 4040 4045

Val Val Val Pro Asp Tyr Gly Thr Tyr Lys Asn Thr Cys Asp Gly Asn  
4050 4055 4060

Thr Phe Thr Tyr Ala Ser Ala Leu Trp Glu Ile Gln Gln Val Val Asp  
4065 4070 4075 4080

Ala Asp Ser Lys Ile Val Gln Leu Ser Glu Ile Asn Met Asp Asn Ser  
4085 4090 4095

Pro Asn Leu Ala Trp Pro Leu Ile Val Thr Ala Leu Arg Ala Asn Ser  
4100 4105 4110

Ala Val Lys Leu Gln Asn Asn Glu Leu Ser Pro Val Ala Leu Arg Gln  
4115 4120 4125

Met Ser Cys Ala Ala Gly Thr Thr Gln Thr Ala Cys Thr Asp Asp Asn  
4130 4135 4140

Ala Leu Ala Tyr Tyr Asn Asn Ser Lys Gly Gly Arg Phe Val Leu Ala  
4145 4150 4155 4160

SEQLIST-20480.TXT

Leu Leu Ser Asp His Gln Asp Leu Lys Trp Ala Arg Phe Pro Lys Ser  
4165 4170 4175

Asp Gly Thr Gly Thr Ile Tyr Thr Glu Leu Glu Pro Pro Cys Arg Phe  
4180 4185 4190

Val Thr Asp Thr Pro Lys Gly Pro Lys Val Lys Tyr Leu Tyr Phe Ile  
4195 4200 4205

Lys Gly Leu Asn Asn Leu Asn Arg Gly Met Val Leu Gly Ser Leu Ala  
4210 4215 4220

Ala Thr Val Arg Leu Gln Ala Gly Asn Ala Thr Glu Val Pro Ala Asn  
4225 4230 4235 4240

Ser Thr Val Leu Ser Phe Cys Ala Phe Ala Val Asp Pro Ala Lys Ala  
4245 4250 4255

Tyr Lys Asp Tyr Leu Ala Ser Gly Gly Gln Pro Ile Thr Asn Cys Val  
4260 4265 4270

Lys Met Leu Cys Thr His Thr Gly Thr Gly Gln Ala Ile Thr Val Thr  
4275 4280 4285

Pro Glu Ala Asn Met Asp Gln Glu Ser Phe Gly Gly Ala Ser Cys Cys  
4290 4295 4300

Leu Tyr Cys Arg Cys His Ile Asp His Pro Asn Pro Lys Gly Phe Cys  
4305 4310 4315 4320

Asp Leu Lys Gly Lys Tyr Val Gln Ile Pro Thr Thr Cys Ala Asn Asp  
4325 4330 4335

Pro Val Gly Phe Thr Leu Arg Asn Thr Val Cys Thr Val Cys Gly Met  
4340 4345 4350

Trp Lys Gly Tyr Gly Cys Ser Cys Asp Gln Leu Arg Glu Pro Leu Met  
4355 4360 4365

Gln Ser Ala Asp Ala Ser Thr Phe Leu Asn Gly Val Ser Ala Ala Arg  
4370 4375 4380

Leu Thr Pro Cys Gly Thr Gly Thr Ser Thr Asp Val Val Tyr Arg Ala  
4385 4390 4395 4400

Phe Asp Ile Tyr Asn Glu Lys Val Ala Gly Phe Ala Lys Phe Leu Lys  
4405 4410 4415

Thr Asn Cys Cys Arg Phe Gln Glu Lys Asp Glu Glu Gly Asn Leu Leu  
4420 4425 4430

Asp Ser Tyr Phe Val Val Lys Arg His Thr Met Ser Asn Tyr Gln His  
4435 4440 4445

Glu Glu Thr Ile Tyr Asn Leu Val Lys Asp Cys Pro Ala Val Ala Val  
4450 4455 4460

His Asp Phe Phe Lys Phe Arg Val Asp Gly Asp Met Val Pro His Ile  
4465 4470 4475 4480

Ser Arg Gln Arg Leu Thr Lys Tyr Thr Met Ala Asp Leu Val Tyr Ala  
4485 4490 4495



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Leu Arg His Phe Asp Glu Gly Asn Cys Asp Thr Leu Lys Glu Ile Leu  
4500 4505 4510

Val Thr Tyr Asn Cys Cys Asp Asp Asp Tyr Phe Asn Lys Lys Asp Trp  
4515 4520 4525

Tyr Asp Phe Val Glu Asn Pro Asp Ile Leu Arg Val Tyr Ala Asn Leu  
4530 4535 4540

Gly Glu Arg Val Arg Gln Ser Leu Leu Lys Thr Val Gln Phe Cys Asp  
4545 4550 4555 4560

Ala Met Arg Asp Ala Gly Ile Val Gly Val Leu Thr Leu Asp Asn Gln  
4565 4570 4575

Asp Leu Asn Gly Asn Trp Tyr Asp Phe Gly Asp Phe Val Gln Val Ala  
4580 4585 4590

Pro Gly Cys Gly Val Pro Ile Val Asp Ser Tyr Tyr Ser Leu Leu Met  
4595 4600 4605

Pro Ile Leu Thr Leu Thr Arg Ala Leu Ala Ala Glu Ser His Met Asp  
4610 4615 4620

Ala Asp Leu Ala Lys Pro Leu Ile Lys Trp Asp Leu Leu Lys Tyr Asp  
4625 4630 4635 4640

Phe Thr Glu Glu Arg Leu Cys Leu Phe Asp Arg Tyr Phe Lys Tyr Trp  
4645 4650 4655

Asp Gln Thr Tyr His Pro Asn Cys Ile Asn Cys Leu Asp Asp Arg Cys  
4660 4665 4670

Ile Leu His Cys Ala Asn Phe Asn Val Leu Phe Ser Thr Val Phe Pro  
4675 4680 4685

Pro Thr Ser Phe Gly Pro Leu Val Arg Lys Ile Phe Val Asp Gly Val  
4690 4695 4700

Pro Phe Val Val Ser Thr Gly Tyr His Phe Arg Glu Leu Gly Val Val  
4705 4710 4715 4720

His Asn Gln Asp Val Asn Leu His Ser Ser Arg Leu Ser Phe Lys Glu  
4725 4730 4735

Leu Leu Val Tyr Ala Ala Asp Pro Ala Met His Ala Ala Ser Gly Asn  
4740 4745 4750

Leu Leu Leu Asp Lys Arg Thr Thr Cys Phe Ser Val Ala Ala Leu Thr  
4755 4760 4765

Asn Asn Val Ala Phe Gln Thr Val Lys Pro Gly Asn Phe Asn Lys Asp  
4770 4775 4780

Phe Tyr Asp Phe Ala Val Ser Lys Gly Phe Phe Lys Glu Gly Ser Ser  
4785 4790 4795 4800

Val Glu Leu Lys His Phe Phe Phe Ala Gln Asp Gly Asn Ala Ala Ile  
4805 4810 4815

Ser Asp Tyr Asp Tyr Tyr Arg Tyr Asn Leu Pro Thr Met Cys Asp Ile  
4820 4825 4830

SEQLIST-20480.TXT

Arg Gln Leu Leu Phe Val Val Glu Val Val Asp Lys Tyr Phe Asp Cys  
4835 4840 4845

Tyr Asp Gly Gly Cys Ile Asn Ala Asn Gln Val Ile Val Asn Asn Leu  
4850 4855 4860

Asp Lys Ser Ala Gly Phe Pro Phe Asn Lys Trp Gly Lys Ala Arg Leu  
4865 4870 4875 4880

Tyr Tyr Asp Ser Met Ser Tyr Glu Asp Gln Asp Ala Leu Phe Ala Tyr  
4885 4890 4895

Thr Lys Arg Asn Val Ile Pro Thr Ile Thr Gln Met Asn Leu Lys Tyr  
4900 4905 4910

Ala Ile Ser Ala Lys Asn Arg Ala Arg Thr Val Ala Gly Val Ser Ile  
4915 4920 4925

Cys Ser Thr Met Thr Asn Arg Gln Phe His Gln Lys Leu Leu Lys Ser  
4930 4935 4940

Ile Ala Ala Thr Arg Gly Ala Thr Val Val Ile Gly Thr Ser Lys Phe  
4945 4950 4955 4960

Tyr Gly Gly Trp His Asn Met Leu Lys Thr Val Tyr Ser Asp Val Glu  
4965 4970 4975

Thr Pro His Leu Met Gly Trp Asp Tyr Pro Lys Cys Asp Arg Ala Met  
4980 4985 4990

Pro Asn Met Leu Arg Ile Met Ala Ser Leu Val Leu Ala Arg Lys His  
4995 5000 5005

Asn Thr Cys Cys Asn Leu Ser His Arg Phe Tyr Arg Leu Ala Asn Glu  
5010 5015 5020

Cys Ala Gln Val Leu Ser Glu Met Val Met Cys Gly Gly Ser Leu Tyr  
5025 5030 5035 5040

Val Lys Pro Gly Gly Thr Ser Ser Gly Asp Ala Thr Thr Ala Tyr Ala  
5045 5050 5055

Asn Ser Val Phe Asn Ile Cys Gln Ala Val Thr Ala Asn Val Asn Ala  
5060 5065 5070

Leu Leu Ser Thr Asp Gly Asn Lys Ile Ala Asp Lys Tyr Val Arg Asn  
5075 5080 5085

Leu Gln His Arg Leu Tyr Glu Cys Leu Tyr Arg Asn Arg Asp Val Asp  
5090 5095 5100

His Glu Phe Val Asp Glu Phe Tyr Ala Tyr Leu Arg Lys His Phe Ser  
5105 5110 5115 5120

Met Met Ile Leu Ser Asp Asp Ala Val Val Cys Tyr Asn Ser Asn Tyr  
5125 5130 5135

Ala Ala Gln Gly Leu Val Ala Ser Ile Lys Asn Phe Lys Ala Val Leu  
5140 5145 5150

Tyr Tyr Gln Asn Asn Val Phe Met Ser Glu Ala Lys Cys Trp Thr Glu  
5155 5160 5165

SEQLIST-20480.TXT

Thr Asp Leu Thr Lys Gly Pro His Glu Phe Cys Ser Gln His Thr Met  
 5170 5175 5180  
 Leu Val Lys Gln Gly Asp Asp Tyr Val Tyr Leu Pro Tyr Pro Asp Pro  
 5185 5190 5195 5200  
 Ser Arg Ile Leu Gly Ala Gly Cys Phe Val Asp Asp Ile Val Lys Thr  
 5205 5210 5215  
 Asp Gly Thr Leu Met Ile Glu Arg Phe Val Ser Leu Ala Ile Asp Ala  
 5220 5225 5230  
 Tyr Pro Leu Thr Lys His Pro Asn Gln Glu Tyr Ala Asp Val Phe His  
 5235 5240 5245  
 Leu Tyr Leu Gln Tyr Ile Arg Lys Leu His Asp Glu Leu Thr Gly His  
 5250 5255 5260  
 Met Leu Asp Met Tyr Ser Val Met Leu Thr Asn Asp Asn Thr Ser Arg  
 5265 5270 5275 5280  
 Tyr Trp Glu Pro Glu Phe Tyr Glu Ala Met Tyr Thr Pro His Thr Val  
 5285 5290 5295  
 Leu Gln Ala Val Gly Ala Cys Val Leu Cys Asn Ser Gln Thr Ser Leu  
 5300 5305 5310  
 Arg Cys Gly Ala Cys Ile Arg Arg Pro Phe Leu Cys Cys Lys Cys Cys  
 5315 5320 5325  
 Tyr Asp His Val Ile Ser Thr Ser His Lys Leu Val Leu Ser Val Asn  
 5330 5335 5340  
 Pro Tyr Val Cys Asn Ala Pro Gly Cys Asp Val Thr Asp Val Thr Gln  
 5345 5350 5355 5360  
 Leu Tyr Leu Gly Gly Met Ser Tyr Tyr Cys Lys Ser His Lys Pro Pro  
 5365 5370 5375  
 Ile Ser Phe Pro Leu Cys Ala Asn Gly Gln Val Phe Gly Leu Tyr Lys  
 5380 5385 5390  
 Asn Thr Cys Val Gly Ser Asp Asn Val Thr Asp Phe Asn Ala Ile Ala  
 5395 5400 5405  
 Thr Cys Asp Trp Thr Asn Ala Gly Asp Tyr Ile Leu Ala Asn Thr Cys  
 5410 5415 5420  
 Thr Glu Arg Leu Lys Leu Phe Ala Ala Glu Thr Leu Lys Ala Thr Glu  
 5425 5430 5435 5440  
 Glu Thr Phe Lys Leu Ser Tyr Gly Ile Ala Thr Val Arg Glu Val Leu  
 5445 5450 5455  
 Ser Asp Arg Glu Leu His Leu Ser Trp Glu Val Gly Lys Pro Arg Pro  
 5460 5465 5470  
 Pro Leu Asn Arg Asn Tyr Val Phe Thr Gly Tyr Arg Val Thr Lys Asn  
 5475 5480 5485  
 Ser Lys Val Gln Ile Gly Glu Tyr Thr Phe Glu Lys Gly Asp Tyr Gly  
 5490 5495 5500

SEQLIST-20480.TXT

Asp Ala Val Val Tyr Arg Gly Thr Thr Thr Tyr Lys Leu Asn Val Gly  
 5505 5510 5515 5520  
 Asp Tyr Phe Val Leu Thr Ser His Thr Val Met Pro Leu Ser Ala Pro  
 5525 5530 5535  
 Thr Leu Val Pro Gln Glu His Tyr Val Arg Ile Thr Gly Leu Tyr Pro  
 5540 5545 5550  
 Thr Leu Asn Ile Ser Asp Glu Phe Ser Ser Asn Val Ala Asn Tyr Gln  
 5555 5560 5565  
 Lys Val Gly Met Gln Lys Tyr Ser Thr Leu Gln Gly Pro Pro Gly Thr  
 5570 5575 5580  
 Gly Lys Ser His Phe Ala Ile Gly Leu Ala Leu Tyr Tyr Pro Ser Ala  
 5585 5590 5595 5600  
 Arg Ile Val Tyr Thr Ala Cys Ser His Ala Ala Val Asp Ala Leu Cys  
 5605 5610 5615  
 Glu Lys Ala Leu Lys Tyr Leu Pro Ile Asp Lys Cys Ser Arg Ile Ile  
 5620 5625 5630  
 Pro Ala Arg Ala Arg Val Glu Cys Phe Asp Lys Phe Lys Val Asn Ser  
 5635 5640 5645  
 Thr Leu Glu Gln Tyr Val Phe Cys Thr Val Asn Ala Leu Pro Glu Thr  
 5650 5655 5660  
 Thr Ala Asp Ile Val Val Phe Asp Glu Ile Ser Met Ala Thr Asn Tyr  
 5665 5670 5675 5680  
 Asp Leu Ser Val Val Asn Ala Arg Leu Arg Ala Lys His Tyr Val Tyr  
 5685 5690 5695  
 Ile Gly Asp Pro Ala Gln Leu Pro Ala Pro Arg Thr Leu Leu Thr Lys  
 5700 5705 5710  
 Gly Thr Leu Glu Pro Glu Tyr Phe Asn Ser Val Cys Arg Leu Met Lys  
 5715 5720 5725  
 Thr Ile Gly Pro Asp Met Phe Leu Gly Thr Cys Arg Arg Cys Pro Ala  
 5730 5735 5740  
 Glu Ile Val Asp Thr Val Ser Ala Leu Val Tyr Asp Asn Lys Leu Lys  
 5745 5750 5755 5760  
 Ala His Lys Asp Lys Ser Ala Gln Cys Phe Lys Met Phe Tyr Lys Gly  
 5765 5770 5775  
 Val Ile Thr His Asp Val Ser Ser Ala Ile Asn Arg Pro Gln Ile Gly  
 5780 5785 5790  
 Val Val Arg Glu Phe Leu Thr Arg Asn Pro Ala Trp Arg Lys Ala Val  
 5795 5800 5805  
 Phe Ile Ser Pro Tyr Asn Ser Gln Asn Ala Val Ala Ser Lys Ile Leu  
 5810 5815 5820  
 Gly Leu Pro Thr Gln Thr Val Asp Ser Ser Gln Gly Ser Glu Tyr Asp  
 5825 5830 5835 5840

SEQLIST-20480.TXT

Tyr Val Ile Phe Thr Gln Thr Thr Glu Thr Ala His Ser Cys Asn Val  
5845 5850 5855

Asn Arg Phe Asn Val Ala Ile Thr Arg Ala Lys Ile Gly Ile Leu Cys  
5860 5865 5870

Ile Met Ser Asp Arg Asp Leu Tyr Asp Lys Leu Gln Phe Thr Ser Leu  
5875 5880 5885

Glu Ile Pro Arg Arg Asn Val Ala Thr Leu Gln Ala Glu Asn Val Thr  
5890 5895 5900

Gly Leu Phe Lys Asp Cys Ser Lys Ile Ile Thr Gly Leu His Pro Thr  
5905 5910 5915 5920

Gln Ala Pro Thr His Leu Ser Val Asp Ile Lys Phe Lys Thr Glu Gly  
5925 5930 5935

Leu Cys Val Asp Ile Pro Gly Ile Pro Lys Asp Met Thr Tyr Arg Arg  
5940 5945 5950

Leu Ile Ser Met Met Gly Phe Lys Met Asn Tyr Gln Val Asn Gly Tyr  
5955 5960 5965

Pro Asn Met Phe Ile Thr Arg Glu Glu Ala Ile Arg His Val Arg Ala  
5970 5975 5980

Trp Ile Gly Phe Asp Val Glu Gly Cys His Ala Thr Arg Asp Ala Val  
5985 5990 5995 6000

Gly Thr Asn Leu Pro Leu Gln Leu Gly Phe Ser Thr Gly Val Asn Leu  
6005 6010 6015

Val Ala Val Pro Thr Gly Tyr Val Asp Thr Glu Asn Asn Thr Glu Phe  
6020 6025 6030

Thr Arg Val Asn Ala Lys Pro Pro Pro Gly Asp Gln Phe Lys His Leu  
6035 6040 6045

Ile Pro Leu Met Tyr Lys Gly Leu Pro Trp Asn Val Val Arg Ile Lys  
6050 6055 6060

Ile Val Gln Met Leu Ser Asp Thr Leu Lys Gly Leu Ser Asp Arg Val  
6065 6070 6075 6080

Val Phe Val Leu Trp Ala His Gly Phe Glu Leu Thr Ser Met Lys Tyr  
6085 6090 6095

Phe Val Lys Ile Gly Pro Glu Arg Thr Cys Cys Leu Cys Asp Lys Arg  
6100 6105 6110

Ala Thr Cys Phe Ser Thr Ser Ser Asp Thr Tyr Ala Cys Trp Asn His  
6115 6120 6125

Ser Val Gly Phe Asp Tyr Val Tyr Asn Pro Phe Met Ile Asp Val Gln  
6130 6135 6140

Gln Trp Gly Phe Thr Gly Asn Leu Gln Ser Asn His Asp Gln His Cys  
6145 6150 6155 6160

Gln Val His Gly Asn Ala His Val Ala Ser Cys Asp Ala Ile Met Thr  
6165 6170 6175

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Arg Cys Leu Ala Val His Glu Cys Phe Val Lys Arg Val Asp Trp Ser  
6180 6185 6190

Val Glu Tyr Pro Ile Ile Gly Asp Glu Leu Arg Val Asn Ser Ala Cys  
6195 6200 6205

Arg Lys Val Gln His Met Val Val Lys Ser Ala Leu Leu Ala Asp Lys  
6210 6215 6220

Phe Pro Val Leu His Asp Ile Gly Asn Pro Lys Ala Ile Lys Cys Val  
6225 6230 6235 6240

Pro Gln Ala Glu Val Glu Trp Lys Phe Tyr Asp Ala Gln Pro Cys Ser  
6245 6250 6255

Asp Lys Ala Tyr Lys Ile Glu Glu Leu Phe Tyr Ser Tyr Ala Thr His  
6260 6265 6270

His Asp Lys Phe Thr Asp Gly Val Cys Leu Phe Trp Asn Cys Asn Val  
6275 6280 6285

Asp Arg Tyr Pro Ala Asn Ala Ile Val Cys Arg Phe Asp Thr Arg Val  
6290 6295 6300

Leu Ser Asn Leu Asn Leu Pro Gly Cys Asp Gly Gly Ser Leu Tyr Val  
6305 6310 6315 6320

Asn Lys His Ala Phe His Thr Pro Ala Phe Asp Lys Ser Ala Phe Thr  
6325 6330 6335

Asn Leu Lys Gln Leu Pro Phe Phe Tyr Tyr Ser Asp Ser Pro Cys Glu  
6340 6345 6350

Ser His Gly Lys Gln Val Val Ser Asp Ile Asp Tyr Val Pro Leu Lys  
6355 6360 6365

Ser Ala Thr Cys Ile Thr Arg Cys Asn Leu Gly Gly Ala Val Cys Arg  
6370 6375 6380

His His Ala Asn Glu Tyr Arg Gln Tyr Leu Asp Ala Tyr Asn Met Met  
6385 6390 6395 6400

Ile Ser Ala Gly Phe Ser Leu Trp Ile Tyr Lys Gln Phe Asp Thr Tyr  
6405 6410 6415

Asn Leu Trp Asn Thr Phe Thr Arg Leu Gln Ser Leu Glu Asn Val Ala  
6420 6425 6430

Tyr Asn Val Val Asn Lys Gly His Phe Asp Gly His Ala Gly Glu Ala  
6435 6440 6445

Pro Val Ser Ile Ile Asn Asn Ala Val Tyr Thr Lys Val Asp Gly Ile  
6450 6455 6460

Asp Val Glu Ile Phe Glu Asn Lys Thr Thr Leu Pro Val Asn Val Ala  
6465 6470 6475 6480

Phe Glu Leu Trp Ala Lys Arg Asn Ile Lys Pro Val Pro Glu Ile Lys  
6485 6490 6495

Ile Leu Asn Asn Leu Gly Val Asp Ile Ala Ala Asn Thr Val Ile Trp  
6500 6505 6510

SEQLIST-20480.TXT

Asp Tyr Lys Arg Glu Ala Pro Ala His Val Ser Thr Ile Gly Val Cys  
6515 6520 6525

Thr Met Thr Asp Ile Ala Lys Lys Pro Thr Glu Ser Ala Cys Ser Ser  
6530 6535 6540

Leu Thr Val Leu Phe Asp Gly Arg Val Glu Gly Gln Val Asp Leu Phe  
6545 6550 6555 6560

Arg Asn Ala Arg Asn Gly Val Leu Ile Thr Glu Gly Ser Val Lys Gly  
6565 6570 6575

Leu Thr Pro Ser Lys Gly Pro Ala Gln Ala Ser Val Asn Gly Val Thr  
6580 6585 6590

Leu Ile Gly Glu Ser Val Lys Thr Gln Phe Asn Tyr Phe Lys Lys Val  
6595 6600 6605

Asp Gly Ile Ile Gln Gln Leu Pro Glu Thr Tyr Phe Thr Gln Ser Arg  
6610 6615 6620

Asp Leu Glu Asp Phe Lys Pro Arg Ser Gln Met Glu Thr Asp Phe Leu  
6625 6630 6635 6640

Glu Leu Ala Met Asp Glu Phe Ile Gln Arg Tyr Lys Leu Glu Gly Tyr  
6645 6650 6655

Ala Phe Glu His Ile Val Tyr Gly Asp Phe Ser His Gly Gln Leu Gly  
6660 6665 6670

Gly Leu His Leu Met Ile Gly Leu Ala Lys Arg Ser Gln Asp Ser Pro  
6675 6680 6685

Leu Lys Leu Glu Asp Phe Ile Pro Met Asp Ser Thr Val Lys Asn Tyr  
6690 6695 6700

Phe Ile Thr Asp Ala Gln Thr Gly Ser Ser Lys Cys Val Cys Ser Val  
6705 6710 6715 6720

Ile Asp Leu Leu Leu Asp Asp Phe Val Glu Ile Ile Lys Ser Gln Asp  
6725 6730 6735

Leu Ser Val Ile Ser Lys Val Val Lys Val Thr Ile Asp Tyr Ala Glu  
6740 6745 6750

Ile Ser Phe Met Leu Trp Cys Lys Asp Gly His Val Glu Thr Phe Tyr  
6755 6760 6765

Pro Lys Leu Gln Ala Ser Arg Ala Trp Gln Pro Gly Val Ala Met Pro  
6770 6775 6780

Asn Leu Tyr Lys Met Gln Arg Met Leu Leu Glu Lys Cys Asp Leu Gln  
6785 6790 6795 6800

Asn Tyr Gly Glu Asn Ala Val Ile Pro Lys Gly Ile Met Met Asn Val  
6805 6810 6815

Ala Lys Tyr Thr Gln Leu Cys Gln Tyr Leu Asn Thr Leu Thr Leu Ala  
6820 6825 6830

Val Pro Tyr Asn Met Arg Val Ile His Phe Gly Ala Gly Ser Asp Lys  
6835 6840 6845

SEQLIST-20480.TXT

Gly Val Ala Pro Gly Thr Ala Val Leu Arg Gln Trp Leu Pro Thr Gly  
6850 6855 6860

Thr Leu Leu Val Asp Ser Asp Leu Asn Asp Phe Val Ser Asp Ala Tyr  
6865 6870 6875 6880

Ser Thr Leu Ile Gly Asp Cys Ala Thr Val His Thr Ala Asn Lys Trp  
6885 6890 6895

Asp Leu Ile Ile Ser Asp Met Tyr Asp Pro Arg Thr Lys His Val Thr  
6900 6905 6910

Lys Glu Asn Asp Ser Lys Glu Gly Phe Phe Thr Tyr Leu Cys Gly Phe  
6915 6920 6925

Ile Lys Gln Lys Leu Ala Leu Gly Gly Ser Ile Ala Val Lys Ile Thr  
6930 6935 6940

Glu His Ser Trp Asn Ala Asp Leu Tyr Lys Leu Met Gly His Phe Ser  
6945 6950 6955 6960

Trp Trp Thr Ala Phe Val Thr Asn Val Asn Ala Ser Ser Ser Glu Ala  
6965 6970 6975

Phe Leu Ile Gly Ala Asn Tyr Leu Gly Lys Pro Lys Glu Gln Ile Asp  
6980 6985 6990

Gly Tyr Thr Met His Ala Asn Tyr Ile Phe Trp Arg Asn Thr Asn Pro  
6995 7000 7005

Ile Gln Leu Ser Ser Tyr Ser Leu Phe Asp Met Ser Lys Phe Pro Leu  
7010 7015 7020

Lys Leu Arg Gly Thr Ala Val Met Ser Leu Lys Glu Asn Gln Ile Asn  
7025 7030 7035 7040

Asp Met Ile Tyr Ser Leu Leu Glu Lys Gly Arg Leu Ile Ile Arg Glu  
7045 7050 7055

Asn Asn Arg Val Val Val Ser Ser Asp Ile Leu Val Asn Asn  
7060 7065 7070

<210> 7251  
<211> 7071  
<212> PRT  
<213> SARS coronavirus

<400> 7251  
Met Glu Ser Leu Val Leu Gly Val Asn Glu Lys Thr His Val Gln Leu  
1 5 10 15

Ser Leu Pro Val Leu Gln Val Arg Asp Val Leu Val Arg Gly Phe Gly  
20 25 30

Asp Ser Val Glu Glu Ala Leu Ser Glu Ala Arg Glu His Leu Lys Asn  
35 40 45

Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val Leu Pro Gln Leu  
50 55 60

Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala Leu Ser Thr Asn  
65 70 75 80



SEQLIST-20480.TXT

His Gly His Lys Val Val Glu Leu Val Ala Glu Met Asp Gly Ile Gln  
85 90  
Tyr Gly Arg Ser Gly Ile Thr Leu Gly Val Leu Val Pro His Val Gly  
100 105  
Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg Lys Asn Gly Asn  
115 120 125  
Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu Lys Ser Tyr Asp  
130 135 140  
Leu Gly Asp Glu Leu Gly Thr Asp Pro Ile Glu Asp Tyr Glu Gln Asn  
145 150 155  
Trp Asn Thr Lys His Gly Ser Gly Ala Leu Arg Glu Leu Thr Arg Glu  
165 170 175  
Leu Asn Gly Gly Ala Val Thr Arg Tyr Val Asp Asn Asn Phe Cys Gly  
180 185 190  
Pro Asp Gly Tyr Pro Leu Asp Cys Ile Lys Asp Phe Leu Ala Arg Ala  
195 200 205  
Gly Lys Ser Met Cys Thr Leu Ser Glu Gln Leu Asp Tyr Ile Glu Ser  
210 215 220  
Lys Arg Gly Val Tyr Cys Cys Arg Asp His Glu His Glu Ile Ala Trp  
225 230 235  
Phe Thr Glu Arg Ser Asp Lys Ser Tyr Glu His Gln Thr Pro Phe Glu  
245 250 255  
Ile Lys Ser Ala Lys Lys Phe Asp Thr Phe Lys Gly Glu Cys Pro Lys  
260 265 270  
Phe Val Phe Pro Leu Asn Ser Lys Val Lys Val Ile Gln Pro Arg Val  
275 280 285  
Glu Lys Lys Lys Thr Glu Gly Phe Met Gly Arg Ile Arg Ser Val Tyr  
290 295 300  
Pro Val Ala Ser Pro Gln Glu Cys Asn Asn Met His Leu Ser Thr Leu  
305 310 315  
Met Lys Cys Asn His Cys Asp Glu Val Ser Trp Gln Thr Cys Asp Phe  
325 330 335  
Leu Lys Ala Thr Cys Glu His Cys Gly Thr Glu Asn Leu Val Ile Glu  
340 345 350  
Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met  
355 360 365  
Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val  
370 375 380  
Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly  
385 390 395 400  
Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys  
405 410 415

SEQLIST-20480.TXT

Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly  
                   420                  425                  430  
 Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu  
                   435                  440                  445  
 Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val  
                   450                  455                  460  
 Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe  
                   465                  470                  475                  480  
 Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr  
                   485                  490                  495  
 Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr  
                   500                  505  
 Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser  
                   515                  520                  525  
 Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala Ala Gly Val Ile  
                   530                  535                  540  
 Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pro  
                   545                  550                  555                  560  
 Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln  
                   565                  570                  575  
 Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser Asp Leu Leu Thr  
                   580                  585                  590  
 Asn Ser Val Ile Ile Met Ala Tyr Val Thr Gly Gly Leu Val Gln Gln  
                   595                  600                  605  
 Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr Val Glu Lys Leu  
                   610                  615                  620  
 Arg Pro Ile Phe Glu Trp Ile Glu Ala Lys Leu Ser Ala Gly Val Glu  
                   625                  630                  635                  640  
 Phe Leu Lys Asp Ala Trp Glu Ile Leu Lys Phe Leu Ile Thr Gly Val  
                   645                  650                  655  
 Phe Asp Ile Val Lys Gly Gln Ile Gln Val Ala Ser Asp Asn Ile Lys  
                   660                  665                  670  
 Asp Cys Val Lys Cys Phe Ile Asp Val Val Asn Lys Ala Leu Glu Met  
                   675                  680                  685  
 Cys Ile Asp Gln Val Thr Ile Ala Gly Ala Lys Leu Arg Ser Leu Asn  
                   690                  695                  700  
 Leu Gly Glu Val Phe Ile Ala Gln Ser Lys Gly Leu Tyr Arg Gln Cys  
                   705                  710                  715                  720  
 Ile Arg Gly Lys Glu Gln Leu Gln Leu Leu Met Pro Leu Lys Ala Pro  
                   725                  730                  735  
 Lys Glu Val Thr Phe Leu Glu Gly Asp Ser His Asp Thr Val Leu Thr  
                   740                  745                  750

SEQLIST-20480.TXT

Ser Glu Glu Val Val Leu Lys Asn Gly Glu Leu Glu Ala Leu Glu Thr  
755 760 765

Pro Val Asp Ser Phe Thr Asn Gly Ala Ile Val Gly Thr Pro Val Cys  
770 775 780

Val Asn Gly Leu Met Leu Leu Glu Ile Lys Asp Lys Glu Gln Tyr Cys  
785 790 795 800

Ala Leu Ser Pro Gly Leu Leu Ala Thr Asn Asn Val Phe Arg Leu Lys  
805 810 815

Gly Gly Ala Pro Ile Lys Gly Val Thr Phe Gly Glu Asp Thr Val Trp  
820 825 830

Glu Val Gln Gly Tyr Lys Asn Val Arg Ile Thr Phe Glu Leu Asp Glu  
835 840 845

Arg Val Asp Lys Val Leu Asn Glu Lys Cys Ser Val Tyr Thr Val Glu  
850 855 860

Ser Gly Thr Glu Val Thr Glu Phe Ala Cys Val Val Ala Glu Ala Val  
865 870 875 880

Val Lys Thr Leu Gln Pro Val Ser Asp Leu Leu Thr Asn Met Gly Ile  
885 890 895

Asp Leu Asp Glu Trp Ser Val Ala Thr Phe Tyr Leu Phe Asp Asp Ala  
900 905 910

Gly Glu Glu Asn Phe Ser Ser Arg Met Tyr Cys Ser Phe Tyr Pro Pro  
915 920 925

Asp Glu Glu Glu Glu Asp Asp Ala Glu Cys Glu Glu Glu Glu Ile Asp  
930 935 940

Glu Thr Cys Glu His Glu Tyr Gly Thr Glu Asp Asp Tyr Gln Gly Leu  
945 950 955 960

Pro Leu Glu Phe Gly Ala Ser Ala Glu Thr Val Arg Val Glu Glu Glu  
965 970 975

Glu Glu Glu Asp Trp Leu Asp Asp Thr Thr Glu Gln Ser Glu Ile Glu  
980 985 990

Pro Glu Pro Glu Pro Thr Pro Glu Glu Pro Val Asn Gln Phe Thr Gly  
995 1000 1005

Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Ile Val  
1010 1015 1020

Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala Ala Asn  
1025 1030 1035 1040

Ile His Leu Lys His Gly Gly Gly Val Ala Gly Ala Leu Asn Lys Ala  
1045 1050 1055

Thr Asn Gly Ala Met Gln Lys Glu Ser Asp Asp Tyr Ile Lys Leu Asn  
1060 1065 1070

Gly Pro Leu Thr Val Gly Gly Ser Cys Leu Leu Ser Gly His Asn Leu  
1075 1080 1085

SEQLIST-20480.TXT

Ala Lys Lys Cys Leu His Val Val Gly Pro Asn Leu Asn Ala Gly Glu  
1090 1095 1100

Asp Ile Gln Leu Leu Lys Ala Ala Tyr Glu Asn Phe Asn Ser Gln Asp  
1105 1110 1115 1120

Ile Leu Leu Ala Pro Leu Leu Ser Ala Gly Ile Phe Gly Ala Lys Pro  
1125 1130 1135

Leu Gln Ser Leu Gln Val Cys Val Gln Thr Val Arg Thr Gln Val Tyr  
1140 1145 1150

Ile Ala Val Asn Asp Lys Ala Leu Tyr Glu Gln Val Val Met Asp Tyr  
1155 1160 1165

Leu Asp Asn Leu Lys Pro Arg Val Glu Ala Pro Lys Gln Glu Glu Pro  
1170 1175 1180

Pro Asn Thr Glu Asp Ser Lys Thr Glu Glu Lys Ser Val Val Gln Lys  
1185 1190 1195 1200

Pro Val Asp Val Lys Pro Lys Ile Lys Ala Cys Ile Asp Glu Val Thr  
1205 1210 1215

Thr Thr Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys Leu Leu Leu Phe  
1220 1225 1230

Ala Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln Asn Met Leu Arg  
1235 1240 1245

Gly Glu Asp Met Ser Phe Leu Glu Lys Asp Ala Pro Tyr Met Val Gly  
1250 1255 1260

Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val Ile Pro Ser Lys  
1265 1270 1275 1280

Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala Leu Lys Lys Val  
1285 1290 1295

Pro Val Asp Glu Tyr Ile Thr Thr Tyr Pro Gly Gln Gly Cys Ala Gly  
1300 1305 1310

Tyr Thr Leu Glu Glu Ala Lys Thr Ala Leu Lys Lys Cys Lys Ser Ala  
1315 1320 1325

Phe Tyr Val Leu Pro Ser Glu Ala Pro Asn Ala Lys Glu Glu Ile Leu  
1330 1335 1340

Gly Thr Val Ser Trp Asn Leu Arg Glu Met Leu Ala His Ala Glu Glu  
1345 1350 1355 1360

Thr Arg Lys Leu Met Pro Ile Cys Met Asp Val Arg Ala Ile Met Ala  
1365 1370 1375

Thr Ile Gln Arg Lys Tyr Lys Gly Ile Lys Ile Gln Glu Gly Ile Val  
1380 1385 1390

Asp Tyr Gly Val Arg Phe Phe Phe Tyr Thr Ser Lys Glu Pro Val Ala  
1395 1400 1405

Ser Ile Ile Thr Lys Leu Asn Ser Leu Asn Glu Pro Leu Val Thr Met  
1410 1415 1420

SEQLIST-20480.TXT

Pro Ile Gly Tyr Val Thr His Gly Phe Asn Leu Glu Glu Ala Ala Arg  
1425 1430 1435 1440

Cys Met Arg Ser Leu Lys Ala Pro Ala Val Val Ser Val Ser Ser Pro  
1445 1450 1455

Asp Ala Val Thr Thr Tyr Asn Gly Tyr Leu Thr Ser Ser Ser Lys Thr  
1460 1465 1470

Ser Glu Glu His Phe Val Glu Thr Val Ser Leu Ala Gly Ser Tyr Arg  
1475 1480 1485

Asp Trp Ser Tyr Ser Gly Gln Arg Thr Glu Leu Gly Val Glu Phe Leu  
1490 1495 1500

Lys Arg Gly Asp Lys Ile Val Tyr His Thr Leu Glu Ser Pro Val Glu  
1505 1510 1515 1520

Phe His Leu Asp Gly Glu Val Leu Ser Leu Asp Lys Leu Lys Ser Leu  
1525 1530 1535

Leu Ser Leu Arg Glu Val Lys Thr Ile Lys Val Phe Thr Thr Val Asp  
1540 1545 1550

Asn Thr Asn Leu His Thr Gln Leu Val Asp Met Ser Met Thr Tyr Gly  
1555 1560 1565

Gln Gln Phe Gly Pro Thr Tyr Leu Asp Gly Ala Asp Val Thr Lys Ile  
1570 1575 1580

Lys Pro His Val Asn His Glu Gly Lys Thr Phe Phe Val Leu Pro Ser  
1585 1590 1595 1600

Asp Asp Thr Leu Arg Ser Glu Ala Phe Glu Tyr Tyr His Thr Leu Asp  
1605 1610 1615

Glu Ser Phe Leu Gly Arg Tyr Met Ser Ala Leu Asn His Thr Lys Lys  
1620 1625 1630

Trp Lys Phe Pro Gln Val Gly Gly Leu Thr Ser Ile Lys Trp Ala Asp  
1635 1640 1645

Asn Asn Cys Tyr Leu Ser Ser Val Leu Leu Ala Leu Gln Gln Leu Glu  
1650 1655 1660

Val Lys Phe Asn Ala Pro Ala Leu Gln Glu Ala Tyr Tyr Arg Ala Arg  
1665 1670 1675 1680

Ala Gly Asp Ala Ala Asn Phe Cys Ala Leu Ile Leu Ala Tyr Ser Asn  
1685 1690 1695

Lys Thr Val Gly Glu Leu Gly Asp Val Arg Glu Thr Met Thr His Leu  
1700 1705 1710

Leu Gln His Ala Asn Leu Glu Ser Ala Lys Arg Val Leu Asn Val Val  
1715 1720 1725

Cys Lys His Cys Gly Gln Lys Thr Thr Thr Leu Thr Gly Val Glu Ala  
1730 1735 1740

Val Met Tyr Met Gly Thr Leu Ser Tyr Asp Asn Leu Lys Thr Gly Val  
1745 1750 1755 1760

SEQLIST-20480.TXT

Ser Ile Pro Cys Val Cys Gly Arg Asp Ala Thr Gln Tyr Leu Val Gln  
1765 1770 1775

Gln Glu Ser Ser Phe Val Met Met Ser Ala Pro Pro Ala Glu Tyr Lys  
1780 1785 1790

Leu Gln Gln Gly Thr Phe Leu Cys Ala Asn Glu Tyr Thr Gly Asn Tyr  
1795 1800 1805

Gln Cys Gly His Tyr Thr His Ile Thr Ala Lys Glu Thr Leu Tyr Arg  
1810 1815 1820

Ile Asp Gly Ala His Leu Thr Lys Met Ser Glu Tyr Lys Gly Pro Val  
1825 1830 1835 1840

Thr Asp Val Phe Tyr Lys Glu Thr Ser Tyr Thr Thr Thr Ile Lys Pro  
1845 1850 1855

Val Ser Tyr Lys Leu Asp Gly Val Thr Tyr Thr Glu Ile Glu Pro Lys  
1860 1865 1870

Leu Asp Gly Tyr Tyr Lys Lys Asp Asn Ala Tyr Tyr Thr Glu Gln Pro  
1875 1880 1885

Ile Asp Leu Val Pro Thr Gln Pro Leu Pro Asn Ala Ser Phe Asp Asn  
1890 1895 1900

Phe Lys Leu Thr Cys Ser Asn Thr Lys Phe Ala Asp Asp Leu Asn Gln  
1905 1910 1915 1920

Met Thr Gly Phe Thr Lys Pro Ala Ser Arg Glu Leu Ser Val Thr Phe  
1925 1930 1935

Phe Pro Asp Leu Asn Gly Asp Val Val Ala Ile Asp Tyr Arg His Tyr  
1940 1945 1950

Ser Ala Ser Phe Lys Lys Gly Ala Lys Leu Leu His Lys Pro Ile Val  
1955 1960 1965

Trp His Ile Asn Gln Ala Thr Thr Lys Thr Thr Phe Lys Pro Asn Thr  
1970 1975 1980

Trp Cys Leu Arg Cys Leu Trp Ser Thr Lys Pro Val Asp Thr Ser Asn  
1985 1990 1995 2000

Ser Phe Glu Val Leu Ala Val Glu Asp Thr Gln Gly Met Asp Asn Leu  
2005 2010 2015

Ala Cys Glu Ser Gln Gln Pro Thr Ser Glu Glu Val Val Glu Asn Pro  
2020 2025 2030

Thr Ile Gln Lys Glu Val Ile Glu Cys Asp Val Lys Thr Thr Glu Val  
2035 2040 2045

Val Gly Asn Val Ile Leu Lys Pro Ser Asp Glu Gly Val Lys Val Thr  
2050 2055 2060

Gln Glu Leu Gly His Glu Asp Leu Met Ala Ala Tyr Val Glu Asn Thr  
2065 2070 2075 2080

Ser Ile Thr Ile Lys Lys Pro Asn Glu Leu Ser Leu Ala Leu Gly Leu  
2085 2090 2095

SEQLIST-20480.TXT

Lys Thr Ile Ala Thr His Gly Ile Ala Ala Ile Asn Ser Val Pro Trp  
2100 2105 2110

Ser Lys Ile Leu Ala Tyr Val Lys Pro Phe Leu Gly Gln Ala Ala Ile  
2115 2120 2125

Thr Thr Ser Asn Cys Ala Lys Arg Leu Ala Gln Arg Val Phe Asn Asn  
2130 2135 2140

Tyr Met Pro Tyr Val Phe Thr Leu Leu Phe Gln Leu Cys Thr Phe Thr  
2145 2150 2155 2160

Lys Ser Thr Asn Ser Arg Ile Arg Ala Ser Leu Pro Thr Thr Ile Ala  
2165 2170 2175

Lys Asn Ser Val Lys Ser Val Ala Lys Leu Cys Leu Asp Ala Gly Ile  
2180 2185 2190

Asn Tyr Val Lys Ser Pro Lys Phe Ser Lys Leu Phe Thr Ile Ala Met  
2195 2200 2205

Trp Leu Leu Leu Leu Ser Ile Cys Leu Gly Ser Leu Ile Cys Val Thr  
2210 2215 2220

Ala Ala Phe Gly Val Leu Leu Ser Asn Phe Gly Ala Pro Ser Tyr Cys  
2225 2230 2235 2240

Asn Gly Val Arg Glu Leu Tyr Leu Asn Ser Ser Asn Val Thr Thr Met  
2245 2250 2255

Asp Phe Cys Glu Gly Ser Phe Pro Cys Ser Ile Cys Leu Ser Gly Leu  
2260 2265 2270

Asp Ser Leu Asp Ser Tyr Pro Ala Leu Glu Thr Ile Gln Val Thr Ile  
2275 2280 2285

Ser Ser Tyr Lys Leu Asp Leu Thr Ile Leu Gly Leu Ala Ala Glu Trp  
2290 2295 2300

Val Leu Ala Tyr Met Leu Phe Thr Lys Phe Phe Tyr Leu Leu Gly Leu  
2305 2310 2315 2320

Ser Ala Ile Met Gln Val Phe Phe Gly Tyr Phe Ala Ser His Phe Ile  
2325 2330 2335

Ser Asn Ser Trp Leu Met Trp Phe Ile Ile Ser Ile Val Gln Met Ala  
2340 2345 2350

Pro Val Ser Ala Met Val Arg Met Tyr Ile Phe Phe Ala Ser Phe Tyr  
2355 2360 2365

Tyr Ile Trp Lys Ser Tyr Val His Ile Met Asp Gly Cys Thr Ser Ser  
2370 2375 2380

Thr Cys Met Met Cys Tyr Lys Arg Asn Arg Ala Thr Arg Val Glu Cys  
2385 2390 2395 2400

Thr Thr Ile Val Asn Gly Met Lys Arg Ser Phe Tyr Val Tyr Ala Asn  
2405 2410 2415

Gly Gly Arg Gly Phe Cys Lys Thr His Asn Trp Asn Cys Leu Asn Cys  
2420 2425 2430

SEQLIST-20480.TXT

Asp Thr Phe Cys Thr Gly Ser Thr Phe Ile Ser Asp Glu Val Ala Arg  
 2435 2440 2445  
 Asp Leu Ser Leu Gln Phe Lys Arg Pro Ile Asn Pro Thr Asp Gln Ser  
 2450 2455 2460  
 Ser Tyr Ile Val Asp Ser Val Ala Val Lys Asn Gly Ala Leu His Leu  
 2465 2470 2475 2480  
 Tyr Phe Asp Lys Ala Gly Gln Lys Thr Tyr Glu Arg His Pro Leu Ser  
 2485 2490 2495  
 His Phe Val Asn Leu Asp Asn Leu Arg Ala Asn Asn Thr Lys Gly Ser  
 2500 2505 2510  
 Leu Pro Ile Asn Val Ile Val Phe Asp Gly Lys Ser Lys Cys Asp Glu  
 2515 2520 2525  
 Ser Ala Ser Lys Ser Ala Ser Val Tyr Tyr Ser Gln Leu Met Cys Gln  
 2530 2535 2540  
 Pro Ile Leu Leu Leu Asp Gln Ala Leu Val Ser Asp Val Gly Asp Ser  
 2545 2550 2555 2560  
 Thr Glu Val Ser Val Lys Met Phe Asp Ala Tyr Val Asp Thr Phe Ser  
 2565 2570 2575  
 Ala Thr Phe Ser Val Pro Met Glu Lys Leu Lys Ala Leu Val Ala Thr  
 2580 2585 2590  
 Ala His Ser Glu Leu Ala Lys Gly Val Ala Leu Asp Gly Val Leu Ser  
 2595 2600 2605  
 Thr Phe Val Ser Ala Ala Arg Gln Gly Val Val Asp Thr Asp Val Asp  
 2610 2615 2620  
 Thr Lys Asp Val Ile Glu Cys Leu Lys Leu Ser His His Ser Asp Leu  
 2625 2630 2635 2640  
 Glu Val Thr Gly Asp Ser Cys Asn Asn Phe Met Leu Thr Tyr Asn Lys  
 2645 2650 2655  
 Val Glu Asn Met Thr Pro Arg Asp Leu Gly Ala Cys Ile Asp Cys Asn  
 2660 2665 2670  
 Ala Arg His Ile Asn Ala Gln Val Ala Lys Ser His Asn Val Ser Leu  
 2675 2680 2685  
 Ile Trp Asn Val Lys Asp Tyr Met Ser Leu Ser Glu Gln Leu Arg Lys  
 2690 2695 2700  
 Gln Ile Arg Ser Ala Ala Lys Lys Asn Asn Ile Pro Phe Arg Leu Thr  
 2705 2710 2715 2720  
 Cys Ala Thr Thr Arg Gln Val Val Asn Val Ile Thr Thr Lys Ile Ser  
 2725 2730 2735  
 Leu Lys Gly Gly Lys Ile Val Ser Thr Cys Phe Lys Leu Met Leu Lys  
 2740 2745 2750  
 Ala Thr Leu Leu Cys Val Leu Ala Ala Leu Val Cys Tyr Ile Val Met  
 2755 2760 2765



SEQLIST-20480.TXT

Pro Val His Thr Leu Ser Ile His Asp Gly Tyr Thr Asn Glu Ile Ile  
2770 2775 2780

Gly Tyr Lys Ala Ile Gln Asp Gly Val Thr Arg Asp Ile Ile Ser Thr  
2785 2790 2795 2800

Asp Asp Cys Phe Ala Asn Lys His Ala Gly Phe Asp Ala Trp Phe Ser  
2805 2810 2815

Gln Arg Gly Gly Ser Tyr Lys Asn Asp Lys Ser Cys Pro Val Val Ala  
2820 2825 2830

Ala Ile Ile Thr Arg Glu Ile Gly Phe Ile Val Pro Gly Leu Pro Gly  
2835 2840 2845

Thr Val Leu Arg Ala Ile Asn Gly Asp Phe Leu His Phe Leu Pro Arg  
2850 2855 2860

Val Phe Ser Ala Val Gly Asn Ile Cys Tyr Thr Pro Ser Lys Leu Ile  
2865 2870 2875 2880

Glu Tyr Ser Asp Phe Ala Thr Ser Ala Cys Val Leu Ala Ala Glu Cys  
2885 2890 2895

Thr Ile Phe Lys Asp Ala Met Gly Lys Pro Val Pro Tyr Cys Tyr Asp  
2900 2905 2910

Thr Asn Leu Leu Glu Gly Ser Ile Ser Tyr Ser Glu Leu Arg Pro Asp  
2915 2920 2925

Thr Arg Tyr Val Leu Met Asp Gly Ser Ile Ile Gln Phe Pro Asn Thr  
2930 2935 2940

Tyr Leu Glu Gly Ser Val Arg Val Val Thr Thr Phe Asp Ala Glu Tyr  
2945 2950 2955 2960

Cys Arg His Gly Thr Cys Glu Arg Ser Glu Val Gly Ile Cys Leu Ser  
2965 2970 2975

Thr Ser Gly Arg Trp Val Leu Asn Asn Glu His Tyr Arg Ala Leu Ser  
2980 2985 2990

Gly Val Phe Cys Gly Val Asp Ala Met Asn Leu Ile Ala Asn Ile Phe  
2995 3000 3005

Thr Pro Leu Val Gln Pro Val Gly Ala Leu Asp Val Ser Ala Ser Val  
3010 3015 3020

Val Ala Gly Gly Ile Ile Ala Ile Leu Val Thr Cys Ala Ala Tyr Tyr  
3025 3030 3035 3040

Phe Met Lys Phe Arg Arg Val Phe Gly Glu Tyr Asn His Val Val Ala  
3045 3050 3055

Ala Asn Ala Leu Leu Phe Leu Met Ser Phe Thr Ile Leu Cys Leu Val  
3060 3065 3070

Pro Ala Tyr Ser Phe Leu Pro Gly Val Tyr Ser Val Phe Tyr Leu Tyr  
3075 3080 3085

Leu Thr Phe Tyr Phe Thr Asn Asp Val Ser Phe Leu Ala His Leu Gln  
3090 3095 3100

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Trp Phe Ala Met Phe Ser Pro Ile Val Pro Phe Trp Ile Thr Ala Ile  
3105 3110 3115 3120

Tyr Val Phe Cys Ile Ser Leu Lys His Cys His Trp Phe Phe Asn Asn  
3125 3130 3135

Tyr Leu Arg Lys Arg Val Met Phe Asn Gly Val Thr Phe Ser Thr Phe  
3140 3145 3150

Glu Glu Ala Ala Leu Cys Thr Phe Leu Leu Asn Lys Glu Met Tyr Leu  
3155 3160 3165

Lys Leu Arg Ser Glu Thr Leu Leu Pro Leu Thr Gln Tyr Asn Arg Tyr  
3170 3175 3180

Leu Ala Leu Tyr Asn Lys Tyr Lys Tyr Phe Ser Gly Ala Leu Asp Thr  
3185 3190 3195 3200

Thr Ser Tyr Arg Glu Ala Ala Cys Cys His Leu Ala Lys Ala Leu Asn  
3205 3210 3215

Asp Phe Ser Asn Ser Gly Ala Asp Val Leu Tyr Gln Pro Pro Gln Thr  
3220 3225 3230

Ser Ile Thr Ser Ala Val Leu Gln Ser Gly Phe Arg Lys Met Ala Phe  
3235 3240 3245

Pro Ser Gly Lys Val Glu Gly Cys Met Val Gln Val Thr Cys Gly Thr  
3250 3255 3260

Thr Thr Leu Asn Gly Leu Trp Leu Asp Asp Thr Val Tyr Cys Pro Arg  
3265 3270 3275 3280

His Val Ile Cys Thr Ala Glu Asp Met Leu Asn Pro Asn Tyr Glu Asp  
3285 3290 3295

Leu Leu Ile Arg Lys Ser Asn His Ser Phe Leu Val Gln Ala Gly Asn  
3300 3305 3310

Val Gln Leu Arg Val Ile Gly His Ser Met Gln Asn Cys Leu Leu Arg  
3315 3320 3325

Leu Lys Val Asp Thr Ser Asn Pro Lys Thr Pro Lys Tyr Lys Phe Val  
3330 3335 3340

Arg Ile Gln Pro Gly Gln Thr Phe Ser Val Leu Ala Cys Tyr Asn Gly  
3345 3350 3355 3360

Ser Pro Ser Gly Val Tyr Gln Cys Ala Met Arg Pro Asn His Thr Ile  
3365 3370 3375

Lys Gly Ser Phe Leu Asn Gly Ser Cys Gly Ser Val Gly Phe Asn Ile  
3380 3385 3390

Asp Tyr Asp Cys Val Ser Phe Cys Tyr Met His His Met Glu Leu Pro  
3395 3400 3405

Thr Gly Val His Ala Gly Thr Asp Leu Glu Gly Lys Phe Tyr Gly Pro  
3410 3415 3420

Phe Val Asp Arg Gln Thr Ala Gln Ala Ala Gly Thr Asp Thr Thr Ile  
3425 3430 3435 3440

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Thr Leu Asn Val Leu Ala Trp Leu Tyr Ala Ala Val Ile Asn Gly Asp  
3445 3450 3455

Arg Trp Phe Leu Asn Arg Phe Thr Thr Thr Leu Asn Asp Phe Asn Leu  
3460 3465 3470

Val Ala Met Lys Tyr Asn Tyr Glu Pro Leu Thr Gln Asp His Val Asp  
3475 3480 3485

Ile Leu Gly Pro Leu Ser Ala Gln Thr Gly Ile Ala Val Leu Asp Met  
3490 3495 3500

Cys Ala Ala Leu Lys Glu Leu Leu Gln Asn Gly Met Asn Gly Arg Thr  
3505 3510 3515 3520

Ile Leu Gly Ser Thr Ile Leu Glu Asp Glu Phe Thr Pro Phe Asp Val  
3525 3530 3535

Val Arg Gln Cys Ser Gly Val Thr Phe Gln Gly Lys Phe Lys Lys Ile  
3540 3545 3550

Val Lys Gly Thr His His Trp Met Leu Leu Thr Phe Leu Thr Ser Leu  
3555 3560 3565

Leu Ile Leu Val Gln Ser Thr Gln Trp Ser Leu Phe Phe Phe Val Tyr  
3570 3575 3580

Glu Asn Ala Phe Leu Pro Phe Thr Leu Gly Ile Met Ala Ile Ala Ala  
3585 3590 3595 3600

Cys Ala Met Leu Leu Val Lys His Lys His Ala Phe Leu Cys Leu Phe  
3605 3610 3615

Leu Leu Pro Ser Leu Ala Thr Val Ala Tyr Phe Asn Met Val Tyr Met  
3620 3625 3630

Pro Ala Ser Trp Val Met Arg Ile Met Thr Trp Leu Glu Leu Ala Asp  
3635 3640 3645

Thr Ser Leu Ser Gly Tyr Arg Leu Lys Asp Cys Val Met Tyr Ala Ser  
3650 3655 3660

Ala Leu Val Leu Leu Ile Leu Met Thr Ala Arg Thr Val Tyr Asp Asp  
3665 3670 3675 3680

Ala Ala Arg Arg Val Trp Thr Leu Met Asn Val Ile Thr Leu Val Tyr  
3685 3690 3695

Lys Val Tyr Tyr Gly Asn Ala Leu Asp Gln Ala Ile Ser Met Trp Ala  
3700 3705 3710

Leu Val Ile Ser Val Thr Ser Asn Tyr Ser Gly Val Val Thr Thr Ile  
3715 3720 3725

Met Phe Leu Ala Arg Ala Ile Val Phe Val Cys Val Glu Tyr Tyr Pro  
3730 3735 3740

Leu Leu Phe Ile Thr Gly Asn Thr Leu Gln Cys Ile Met Leu Val Tyr  
3745 3750 3755 3760

Cys Phe Leu Gly Tyr Cys Cys Cys Cys Tyr Phe Gly Leu Phe Cys Leu  
3765 3770 3775

SEQLIST-20480.TXT

Leu Asn Arg Tyr Phe Arg Leu Thr Leu Gly Val Tyr Asp Tyr Leu Val  
 3780 3785 3790  
 Ser Thr Gln Glu Phe Arg Tyr Met Asn Ser Gln Gly Leu Leu Pro Pro  
 3795 3800 3805  
 Lys Ser Ser Ile Asp Ala Phe Lys Leu Asn Ile Lys Leu Leu Gly Ile  
 3810 3815 3820  
 Gly Gly Lys Pro Cys Ile Lys Val Ala Thr Val Gln Ser Lys Met Ser  
 3825 3830 3835 3840  
 Asp Val Lys Cys Thr Ser Val Val Leu Leu Ser Val Leu Gln Gln Leu  
 3845 3850 3855  
 Arg Val Glu Ser Ser Ser Lys Leu Trp Ala Gln Cys Val Gln Leu His  
 3860 3865 3870  
 Asn Asp Ile Leu Leu Ala Lys Asp Thr Thr Glu Ala Phe Glu Lys Met  
 3875 3880 3885  
 Val Ser Leu Leu Ser Val Leu Leu Ser Met Gln Gly Ala Val Asp Ile  
 3890 3895 3900  
 Asn Arg Leu Cys Glu Glu Met Leu Asp Asn Arg Ala Thr Leu Gln Ala  
 3905 3910 3915 3920  
 Ile Ala Ser Glu Phe Ser Ser Leu Pro Ser Tyr Ala Ala Tyr Ala Thr  
 3925 3930 3935  
 Ala Gln Glu Ala Tyr Glu Gln Ala Val Ala Asn Gly Asp Ser Glu Val  
 3940 3945 3950  
 Val Leu Lys Lys Leu Lys Lys Ser Leu Asn Val Ala Lys Ser Glu Phe  
 3955 3960 3965  
 Asp Arg Asp Ala Ala Met Gln Arg Lys Leu Glu Lys Met Ala Asp Gln  
 3970 3975 3980  
 Ala Met Thr Gln Met Tyr Lys Gln Ala Arg Ser Glu Asp Lys Arg Ala  
 3985 3990 3995 4000  
 Lys Val Thr Ser Ala Met Gln Thr Met Leu Phe Thr Met Leu Arg Lys  
 4005 4010 4015  
 Leu Asp Asn Asp Ala Leu Asn Asn Ile Ile Asn Asn Ala Arg Asp Gly  
 4020 4025 4030  
 Cys Val Pro Leu Asn Ile Ile Pro Leu Thr Thr Ala Ala Lys Leu Met  
 4035 4040 4045  
 Val Val Val Pro Asp Tyr Gly Thr Tyr Lys Asn Thr Cys Asp Gly Asn  
 4050 4055 4060  
 Thr Phe Thr Tyr Ala Ser Ala Leu Trp Glu Ile Gln Gln Val Val Asp  
 4065 4070 4075 4080  
 Ala Asp Ser Lys Ile Val Gln Leu Ser Glu Ile Asn Met Asp Asn Ser  
 4085 4090 4095  
 Pro Asn Leu Ala Trp Pro Leu Ile Val Thr Ala Leu Arg Ala Asn Ser  
 4100 4105 4110

SEQLIST-20480.TXT

Ala Val Lys Leu Gln Asn Asn Glu Leu Ser Pro Val Ala Leu Arg Gln  
4115 4120 4125

Met Ser Cys Ala Ala Gly Thr Thr Gln Thr Ala Cys Thr Asp Asp Asn  
4130 4135 4140

Ala Leu Ala Tyr Tyr Asn Asn Ser Lys Gly Gly Arg Phe Val Leu Ala  
4145 4150 4155 4160

Leu Leu Ser Asp His Gln Asp Leu Lys Trp Ala Arg Phe Pro Lys Ser  
4165 4170 4175

Asp Gly Thr Gly Thr Ile Tyr Thr Glu Leu Glu Pro Pro Cys Arg Phe  
4180 4185 4190

Val Thr Asp Thr Pro Lys Gly Pro Lys Val Lys Tyr Leu Tyr Phe Ile  
4195 4200 4205

Lys Gly Leu Asn Asn Leu Asn Arg Gly Met Val Leu Gly Ser Leu Ala  
4210 4215 4220

Ala Thr Val Arg Leu Gln Ala Gly Asn Ala Thr Glu Val Pro Ala Asn  
4225 4230 4235 4240

Ser Thr Val Leu Ser Phe Cys Ala Phe Ala Val Asp Pro Ala Lys Ala  
4245 4250 4255

Tyr Lys Asp Tyr Leu Ala Ser Gly Gly Gln Pro Ile Thr Asn Cys Val  
4260 4265 4270

Lys Met Leu Cys Thr His Thr Gly Thr Gly Gln Ala Ile Thr Val Thr  
4275 4280 4285

Pro Glu Ala Asn Met Asp Gln Glu Ser Phe Gly Gly Ala Ser Cys Cys  
4290 4295 4300

Leu Tyr Cys Arg Cys His Ile Asp His Pro Asn Pro Lys Gly Phe Cys  
4305 4310 4315 4320

Asp Leu Lys Gly Lys Tyr Val Gln Ile Pro Thr Thr Cys Ala Asn Asp  
4325 4330 4335

Pro Val Gly Phe Thr Leu Arg Asn Thr Val Cys Thr Val Cys Gly Met  
4340 4345 4350

Trp Lys Gly Tyr Gly Cys Ser Cys Asp Gln Leu Arg Glu Pro Leu Met  
4355 4360 4365

Gln Ser Ala Asp Ala Ser Thr Phe Leu Asn Arg Gly Val Ser Ala Ala  
4370 4375 4380

Arg Leu Thr Pro Cys Gly Thr Gly Thr Ser Thr Asp Val Val Tyr Arg  
4385 4390 4395 4400

Ala Phe Asp Ile Tyr Asn Glu Lys Val Ala Gly Phe Ala Lys Phe Leu  
4405 4410 4415

Lys Thr Asn Cys Cys Arg Phe Gln Glu Lys Asp Glu Glu Gly Asn Leu  
4420 4425 4430

Leu Asp Ser Tyr Phe Val Val Lys Arg His Thr Met Ser Asn Tyr Gln  
4435 4440 4445

SEQLIST-20480.TXT

His Glu Glu Thr Ile Tyr Asn Leu Val Lys Asp Cys Pro Ala Val Ala  
 4450 4455 4460  
 Val His Asp Phe Phe Lys Phe Arg Val Asp Gly Asp Met Val Pro His  
 4465 4470 4475 4480  
 Ile Ser Arg Gln Arg Leu Thr Lys Tyr Thr Met Ala Asp Leu Val Tyr  
 4485 4490 4495  
 Ala Leu Arg His Phe Asp Glu Gly Asn Cys Asp Thr Leu Lys Glu Ile  
 4500 4505 4510  
 Leu Val Thr Tyr Asn Cys Cys Asp Asp Asp Tyr Phe Asn Lys Lys Asp  
 4515 4520 4525  
 Trp Tyr Asp Phe Val Glu Asn Pro Asp Ile Leu Arg Val Tyr Ala Asn  
 4530 4535 4540  
 Leu Gly Glu Arg Val Arg Gln Ser Leu Leu Lys Thr Val Gln Phe Cys  
 4545 4550 4555 4560  
 Asp Ala Met Arg Asp Ala Gly Ile Val Gly Val Leu Thr Leu Asp Asn  
 4565 4570 4575  
 Gln Asp Leu Asn Gly Asn Trp Tyr Asp Phe Gly Asp Phe Val Gln Val  
 4580 4585 4590  
 Ala Pro Gly Cys Gly Val Pro Ile Val Asp Ser Tyr Tyr Ser Leu Leu  
 4595 4600 4605  
 Met Pro Ile Leu Thr Leu Thr Arg Ala Leu Ala Ala Glu Ser His Met  
 4610 4615 4620  
 Asp Ala Asp Leu Ala Lys Pro Leu Ile Lys Trp Asp Leu Leu Lys Tyr  
 4625 4630 4635 4640  
 Asp Phe Thr Glu Glu Arg Leu Cys Leu Phe Asp Arg Tyr Phe Lys Tyr  
 4645 4650 4655  
 Trp Asp Gln Thr Tyr His Pro Asn Cys Ile Asn Cys Leu Asp Asp Arg  
 4660 4665 4670  
 Cys Ile Leu His Cys Ala Asn Phe Asn Val Leu Phe Ser Thr Val Phe  
 4675 4680 4685  
 Pro Pro Thr Ser Phe Gly Pro Leu Val Arg Lys Ile Phe Val Asp Gly  
 4690 4695 4700  
 Val Pro Phe Val Val Ser Thr Gly Tyr His Phe Arg Glu Leu Gly Val  
 4705 4710 4715 4720  
 Val His Asn Gln Asp Val Asn Leu His Ser Ser Arg Leu Ser Phe Lys  
 4725 4730 4735  
 Glu Leu Leu Val Tyr Ala Ala Asp Pro Ala Met His Ala Ala Ser Gly  
 4740 4745 4750  
 Asn Leu Leu Leu Asp Lys Arg Thr Thr Cys Phe Ser Val Ala Ala Leu  
 4755 4760 4765  
 Thr Asn Asn Val Ala Phe Gln Thr Val Lys Pro Gly Asn Phe Asn Lys  
 4770 4775 4780

SEQLIST-20480.TXT

Asp Phe Tyr Asp Phe Ala Val Ser Lys Gly Phe Phe Lys Glu Gly Ser  
 4785 4790 4795 4800  
 Ser Val Glu Leu Lys His Phe Phe Phe Ala Gln Asp Gly Asn Ala Ala  
 4805 4810 4815  
 Ile Ser Asp Tyr Asp Tyr Tyr Arg Tyr Asn Leu Pro Thr Met Cys Asp  
 4820 4825 4830  
 Ile Arg Gln Leu Leu Phe Val Val Glu Val Val Asp Lys Tyr Phe Asp  
 4835 4840 4845  
 Cys Tyr Asp Gly Gly Cys Ile Asn Ala Asn Gln Val Ile Val Asn Asn  
 4850 4855 4860  
 Leu Asp Lys Ser Ala Gly Phe Pro Phe Asn Lys Trp Gly Lys Ala Arg  
 4865 4870 4875 4880  
 Leu Tyr Tyr Asp Ser Met Ser Tyr Glu Asp Gln Asp Ala Leu Phe Ala  
 4885 4890 4895  
 Tyr Thr Lys Arg Asn Val Ile Pro Thr Ile Thr Gln Met Asn Leu Lys  
 4900 4905 4910  
 Tyr Ala Ile Ser Ala Lys Asn Arg Ala Arg Thr Val Ala Gly Val Ser  
 4915 4920 4925  
 Ile Cys Ser Thr Met Thr Asn Arg Gln Phe His Gln Lys Leu Leu Lys  
 4930 4935 4940  
 Ser Ile Ala Ala Thr Arg Gly Ala Thr Val Val Ile Gly Thr Ser Lys  
 4945 4950 4955 4960  
 Phe Tyr Gly Gly Trp His Asn Met Leu Lys Thr Val Tyr Ser Asp Val  
 4965 4970 4975  
 Glu Thr Pro His Leu Met Gly Trp Asp Tyr Pro Lys Cys Asp Arg Ala  
 4980 4985 4990  
 Met Pro Asn Met Leu Arg Ile Met Ala Ser Leu Val Leu Ala Arg Lys  
 4995 5000 5005  
 His Asn Thr Cys Cys Asn Leu Ser His Arg Phe Tyr Arg Leu Ala Asn  
 5010 5015 5020  
 Glu Cys Ala Gln Val Leu Ser Glu Met Val Met Cys Gly Gly Ser Leu  
 5025 5030 5035 5040  
 Tyr Val Lys Pro Gly Gly Thr Ser Ser Gly Asp Ala Thr Thr Ala Tyr  
 5045 5050 5055  
 Ala Asn Ser Val Phe Asn Ile Cys Gln Ala Val Thr Ala Asn Val Asn  
 5060 5065 5070  
 Ala Leu Leu Ser Thr Asp Gly Asn Lys Ile Ala Asp Lys Tyr Val Arg  
 5075 5080 5085  
 Asn Leu Gln His Arg Leu Tyr Glu Cys Leu Tyr Arg Asn Arg Asp Val  
 5090 5095 5100  
 Asp His Glu Phe Val Asp Glu Phe Tyr Ala Tyr Leu Arg Lys His Phe  
 5105 5110 5115 5120

SEQLIST-20480.TXT

Ser Met Met Ile Leu Ser Asp Asp Ala Val Val Cys Tyr Asn Ser Asn  
5125 5130 5135

Tyr Ala Ala Gln Gly Leu Val Ala Ser Ile Lys Asn Phe Lys Ala Val  
5140 5145 5150

Leu Tyr Tyr Gln Asn Asn Val Phe Met Ser Glu Ala Lys Cys Trp Thr  
5155 5160 5165

Glu Thr Asp Leu Thr Lys Gly Pro His Glu Phe Cys Ser Gln His Thr  
5170 5175 5180

Met Leu Val Lys Gln Gly Asp Asp Tyr Val Tyr Leu Pro Tyr Pro Asp  
5185 5190 5195 5200

Pro Ser Arg Ile Leu Gly Ala Gly Cys Phe Val Asp Asp Ile Val Lys  
5205 5210 5215

Thr Asp Gly Thr Leu Met Ile Glu Arg Phe Val Ser Leu Ala Ile Asp  
5220 5225 5230

Ala Tyr Pro Leu Thr Lys His Pro Asn Gln Glu Tyr Ala Asp Val Phe  
5235 5240 5245

His Leu Tyr Leu Gln Tyr Ile Arg Lys Leu His Asp Glu Leu Thr Gly  
5250 5255 5260

His Met Leu Asp Met Tyr Ser Val Met Leu Thr Asn Asp Asn Thr Ser  
5265 5270 5275 5280

Arg Tyr Trp Glu Pro Glu Phe Tyr Glu Ala Met Tyr Thr Pro His Thr  
5285 5290 5295

Val Leu Gln Ala Val Gly Ala Cys Val Leu Cys Asn Ser Gln Thr Ser  
5300 5305 5310

Leu Arg Cys Gly Ala Cys Ile Arg Arg Pro Phe Leu Cys Cys Lys Cys  
5315 5320 5325

Cys Tyr Asp His Val Ile Ser Thr Ser His Lys Leu Val Leu Ser Val  
5330 5335 5340

Asn Pro Tyr Val Cys Asn Ala Pro Gly Cys Asp Val Thr Asp Val Thr  
5345 5350 5355 5360

Gln Leu Tyr Leu Gly Gly Met Ser Tyr Tyr Cys Lys Ser His Lys Pro  
5365 5370 5375

Pro Ile Ser Phe Pro Leu Cys Ala Asn Gly Gln Val Phe Gly Leu Tyr  
5380 5385 5390

Lys Asn Thr Cys Val Gly Ser Asp Asn Val Thr Asp Phe Asn Ala Ile  
5395 5400 5405

Ala Thr Cys Asp Trp Thr Asn Ala Gly Asp Tyr Ile Leu Ala Asn Thr  
5410 5415 5420

Cys Thr Glu Arg Leu Lys Leu Phe Ala Ala Glu Thr Leu Lys Ala Thr  
5425 5430 5435 5440

Glu Glu Thr Phe Lys Leu Ser Tyr Gly Ile Ala Thr Val Arg Glu Val  
5445 5450 5455



SEQLIST-20480.TXT

Leu Ser Asp Arg Glu Leu His Leu Ser Trp Glu Val Gly Lys Pro Arg  
 5460 5465 5470  
 Pro Pro Leu Asn Arg Asn Tyr Val Phe Thr Gly Tyr Arg Val Thr Lys  
 5475 5480 5485  
 Asn Ser Lys Val Gln Ile Gly Glu Tyr Thr Phe Glu Lys Gly Asp Tyr  
 5490 5495 5500  
 Gly Asp Ala Val Val Tyr Arg Gly Thr Thr Thr Tyr Lys Leu Asn Val  
 5505 5510 5515 5520  
 Gly Asp Tyr Phe Val Leu Thr Ser His Thr Val Met Pro Leu Ser Ala  
 5525 5530 5535  
 Pro Thr Leu Val Pro Gln Glu His Tyr Val Arg Ile Thr Gly Leu Tyr  
 5540 5545 5550  
 Pro Thr Leu Asn Ile Ser Asp Glu Phe Ser Ser Asn Val Ala Asn Tyr  
 5555 5560 5565  
 Gln Lys Val Gly Met Gln Lys Tyr Ser Thr Leu Gln Gly Pro Pro Gly  
 5570 5575 5580  
 Thr Gly Lys Ser His Phe Ala Ile Gly Leu Ala Leu Tyr Tyr Pro Ser  
 5585 5590 5595 5600  
 Ala Arg Ile Val Tyr Thr Ala Cys Ser His Ala Ala Val Asp Ala Leu  
 5605 5610 5615  
 Cys Glu Lys Ala Leu Lys Tyr Leu Pro Ile Asp Lys Cys Ser Arg Ile  
 5620 5625 5630  
 Ile Pro Ala Arg Ala Arg Val Glu Cys Phe Asp Lys Phe Lys Val Asn  
 5635 5640 5645  
 Ser Thr Leu Glu Gln Tyr Val Phe Cys Thr Val Asn Ala Leu Pro Glu  
 5650 5655 5660  
 Thr Thr Ala Asp Ile Val Val Phe Asp Glu Ile Ser Met Ala Thr Asn  
 5665 5670 5675 5680  
 Tyr Asp Leu Ser Val Val Asn Ala Arg Leu Arg Ala Lys His Tyr Val  
 5685 5690 5695  
 Tyr Ile Gly Asp Pro Ala Gln Leu Pro Ala Pro Arg Thr Leu Leu Thr  
 5700 5705 5710  
 Lys Gly Thr Leu Glu Pro Glu Tyr Phe Asn Ser Val Cys Arg Leu Met  
 5715 5720 5725  
 Lys Thr Ile Gly Pro Asp Met Phe Leu Gly Thr Cys Arg Arg Cys Pro  
 5730 5735 5740  
 Ala Glu Ile Val Asp Thr Val Ser Ala Leu Val Tyr Asp Asn Lys Leu  
 5745 5750 5755 5760  
 Lys Ala His Lys Asp Lys Ser Ala Gln Cys Phe Lys Met Phe Tyr Lys  
 5765 5770 5775  
 Gly Val Ile Thr His Asp Val Ser Ser Ala Ile Asn Arg Pro Gln Ile  
 5780 5785 5790

SEQLIST-20480.TXT

Gly Val Val Arg Glu Phe Leu Thr Arg Asn Pro Ala Trp Arg Lys Ala  
5795 5800 5805

Val Phe Ile Ser Pro Tyr Asn Ser Gln Asn Ala Val Ala Ser Lys Ile  
5810 5815 5820

Leu Gly Leu Pro Thr Gln Thr Val Asp Ser Ser Gln Gly Ser Glu Tyr  
5825 5830 5835 5840

Asp Tyr Val Ile Phe Thr Gln Thr Thr Glu Thr Ala His Ser Cys Asn  
5845 5850 5855

Val Asn Arg Phe Asn Val Ala Ile Thr Arg Ala Lys Ile Gly Ile Leu  
5860 5865 5870

Cys Ile Met Ser Asp Arg Asp Leu Tyr Asp Lys Leu Gln Phe Thr Ser  
5875 5880 5885

Leu Glu Ile Pro Arg Arg Asn Val Ala Thr Leu Gln Ala Glu Asn Val  
5890 5895 5900

Thr Gly Leu Phe Lys Asp Cys Ser Lys Ile Ile Thr Gly Leu His Pro  
5905 5910 5915 5920

Thr Gln Ala Pro Thr His Leu Ser Val Asp Ile Lys Phe Lys Thr Glu  
5925 5930 5935

Gly Leu Cys Val Asp Ile Pro Gly Ile Pro Lys Asp Met Thr Tyr Arg  
5940 5945 5950

Arg Leu Ile Ser Met Met Gly Phe Lys Met Asn Tyr Gln Val Asn Gly  
5955 5960 5965

Tyr Pro Asn Met Phe Ile Thr Arg Glu Glu Ala Ile Arg His Val Arg  
5970 5975 5980

Ala Trp Ile Gly Phe Asp Val Glu Gly Cys His Ala Thr Arg Asp Ala  
5985 5990 5995 6000

Val Gly Thr Asn Leu Pro Leu Gln Leu Gly Phe Ser Thr Gly Val Asn  
6005 6010 6015

Leu Val Ala Val Pro Thr Gly Tyr Val Asp Thr Glu Asn Asn Thr Glu  
6020 6025 6030

Phe Thr Arg Val Asn Ala Lys Pro Pro Pro Gly Asp Gln Phe Lys His  
6035 6040 6045

Leu Ile Pro Leu Met Tyr Lys Gly Leu Pro Trp Asn Val Val Arg Ile  
6050 6055 6060

Lys Ile Val Gln Met Leu Ser Asp Thr Leu Lys Gly Leu Ser Asp Arg  
6065 6070 6075 6080

Val Val Phe Val Leu Trp Ala His Gly Phe Glu Leu Thr Ser Met Lys  
6085 6090 6095

Tyr Phe Val Lys Ile Gly Pro Glu Arg Thr Cys Cys Leu Cys Asp Lys  
6100 6105 6110

Arg Ala Thr Cys Phe Ser Thr Ser Ser Asp Thr Tyr Ala Cys Trp Asn  
6115 6120 6125

SEQLIST-20480.TXT

His Ser Val Gly Phe Asp Tyr Val Tyr Asn Pro Phe Met Ile Asp Val  
 6130 6135 6140  
 Gln Gln Trp Gly Phe Thr Gly Asn Leu Gln Ser Asn His Asp Gln His  
 6145 6150 6155 6160  
 Cys Gln Val His Gly Asn Ala His Val Ala Ser Cys Asp Ala Ile Met  
 6165 6170 6175  
 Thr Arg Cys Leu Ala Val His Glu Cys Phe Val Lys Arg Val Asp Trp  
 6180 6185 6190  
 Ser Val Glu Tyr Pro Ile Ile Gly Asp Glu Leu Arg Val Asn Ser Ala  
 6195 6200 6205  
 Cys Arg Lys Val Gln His Met Val Val Lys Ser Ala Leu Leu Ala Asp  
 6210 6215 6220  
 Lys Phe Pro Val Leu His Asp Ile Gly Asn Pro Lys Ala Ile Lys Cys  
 6225 6230 6235 6240  
 Val Pro Gln Ala Glu Val Glu Trp Lys Phe Tyr Asp Ala Gln Pro Cys  
 6245 6250 6255  
 Ser Asp Lys Ala Tyr Lys Ile Glu Glu Leu Phe Tyr Ser Tyr Ala Thr  
 6260 6265 6270  
 His His Asp Lys Phe Thr Asp Gly Val Cys Leu Phe Trp Asn Cys Asn  
 6275 6280 6285  
 Val Asp Arg Tyr Pro Ala Asn Ala Ile Val Cys Arg Phe Asp Thr Arg  
 6290 6295 6300  
 Val Leu Ser Asn Leu Asn Leu Pro Gly Cys Asp Gly Gly Ser Leu Tyr  
 6305 6310 6315 6320  
 Val Asn Lys His Ala Phe His Thr Pro Ala Phe Asp Lys Ser Ala Phe  
 6325 6330 6335  
 Thr Asn Leu Lys Gln Leu Pro Phe Phe Tyr Tyr Ser Asp Ser Pro Cys  
 6340 6345 6350  
 Glu Ser His Gly Lys Gln Val Val Ser Asp Ile Asp Tyr Val Pro Leu  
 6355 6360 6365  
 Lys Ser Ala Thr Cys Ile Thr Arg Cys Asn Leu Gly Gly Ala Val Cys  
 6370 6375 6380  
 Arg His His Ala Asn Glu Tyr Arg Gln Tyr Leu Asp Ala Tyr Asn Met  
 6385 6390 6395 6400  
 Met Ile Ser Ala Gly Phe Ser Leu Trp Ile Tyr Lys Gln Phe Asp Thr  
 6405 6410 6415  
 Tyr Asn Leu Trp Asn Thr Phe Thr Arg Leu Gln Ser Leu Glu Asn Val  
 6420 6425 6430  
 Ala Tyr Asn Val Val Asn Lys Gly His Phe Asp Gly His Ala Gly Glu  
 6435 6440 6445  
 Ala Pro Val Ser Ile Ile Asn Asn Ala Val Tyr Thr Lys Val Asp Gly  
 6450 6455 6460

SEQLIST-20480.TXT

Ile Asp Val Glu Ile Phe Glu Asn Lys Thr Thr Leu Pro Val Asn Val  
6465 6470 6475 6480

Ala Phe Glu Leu Trp Ala Lys Arg Asn Ile Lys Pro Val Pro Glu Ile  
6485 6490 6495

Lys Ile Leu Asn Asn Leu Gly Val Asp Ile Ala Ala Asn Thr Val Ile  
6500 6505 6510

Trp Asp Tyr Lys Arg Glu Ala Pro Ala His Val Ser Thr Ile Gly Val  
6515 6520 6525

Cys Thr Met Thr Asp Ile Ala Lys Lys Pro Thr Glu Ser Ala Cys Ser  
6530 6535 6540

Ser Leu Thr Val Leu Phe Asp Gly Arg Val Glu Gly Gln Val Asp Leu  
6545 6550 6555 6560

Phe Arg Asn Ala Arg Asn Gly Val Leu Ile Thr Glu Gly Ser Val Lys  
6565 6570 6575

Gly Leu Thr Pro Ser Lys Gly Pro Ala Gln Ala Ser Val Asn Gly Val  
6580 6585 6590

Thr Leu Ile Gly Glu Ser Val Lys Thr Gln Phe Asn Tyr Phe Lys Lys  
6595 6600 6605

Val Asp Gly Ile Ile Gln Gln Leu Pro Glu Thr Tyr Phe Thr Gln Ser  
6610 6615 6620

Arg Asp Leu Glu Asp Phe Lys Pro Arg Ser Gln Met Glu Thr Asp Phe  
6625 6630 6635 6640

Leu Glu Leu Ala Met Asp Glu Phe Ile Gln Arg Tyr Lys Leu Glu Gly  
6645 6650 6655

Tyr Ala Phe Glu His Ile Val Tyr Gly Asp Phe Ser His Gly Gln Leu  
6660 6665 6670

Gly Gly Leu His Leu Met Ile Gly Leu Ala Lys Arg Ser Gln Asp Ser  
6675 6680 6685

Pro Leu Lys Leu Glu Asp Phe Ile Pro Met Asp Ser Thr Val Lys Asn  
6690 6695 6700

Tyr Phe Ile Thr Asp Ala Gln Thr Gly Ser Ser Lys Cys Val Cys Ser  
6705 6710 6715 6720

Val Ile Asp Leu Leu Leu Asp Asp Phe Val Glu Ile Ile Lys Ser Gln  
6725 6730 6735

Asp Leu Ser Val Ile Ser Lys Val Val Lys Val Thr Ile Asp Tyr Ala  
6740 6745 6750

Glu Ile Ser Phe Met Leu Trp Cys Lys Asp Gly His Val Glu Thr Phe  
6755 6760 6765

Tyr Pro Lys Leu Gln Ala Ser Arg Ala Trp Gln Pro Gly Val Ala Met  
6770 6775 6780

Pro Asn Leu Tyr Lys Met Gln Arg Met Leu Leu Glu Lys Cys Asp Leu  
6785 6790 6795 6800

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Gln Asn Tyr Gly Glu Asn Ala Val Ile Pro Lys Gly Ile Met Met Asn  
6805 6810 6815

Val Ala Lys Tyr Thr Gln Leu Cys Gln Tyr Leu Asn Thr Leu Thr Leu  
6820 6825 6830

Ala Val Pro Tyr Asn Met Arg Val Ile His Phe Gly Ala Gly Ser Asp  
6835 6840 6845

Lys Gly Val Ala Pro Gly Thr Ala Val Leu Arg Gln Trp Leu Pro Thr  
6850 6855 6860

Gly Thr Leu Leu Val Asp Ser Asp Leu Asn Asp Phe Val Ser Asp Ala  
6865 6870 6875 6880

Tyr Ser Thr Leu Ile Gly Asp Cys Ala Thr Val His Thr Ala Asn Lys  
6885 6890 6895

Trp Asp Leu Ile Ile Ser Asp Met Tyr Asp Pro Arg Thr Lys His Val  
6900 6905 6910

Thr Lys Glu Asn Asp Ser Lys Glu Gly Phe Phe Thr Tyr Leu Cys Gly  
6915 6920 6925

Phe Ile Lys Gln Lys Leu Ala Leu Gly Gly Ser Ile Ala Val Lys Ile  
6930 6935 6940

Thr Glu His Ser Trp Asn Ala Asp Leu Tyr Lys Leu Met Gly His Phe  
6945 6950 6955 6960

Ser Trp Trp Thr Ala Phe Val Thr Asn Val Asn Ala Ser Ser Ser Glu  
6965 6970 6975

Ala Phe Leu Ile Gly Ala Asn Tyr Leu Gly Lys Pro Lys Glu Gln Ile  
6980 6985 6990

Asp Gly Tyr Thr Met His Ala Asn Tyr Ile Phe Trp Arg Asn Thr Asn  
6995 7000 7005

Pro Ile Gln Leu Ser Ser Tyr Ser Leu Phe Asp Met Ser Lys Phe Pro  
7010 7015 7020

Leu Lys Leu Arg Gly Thr Ala Val Met Ser Leu Lys Glu Asn Gln Ile  
7025 7030 7035 7040

Asn Asp Met Ile Tyr Ser Leu Leu Glu Lys Gly Arg Leu Ile Ile Arg  
7045 7050 7055

Glu Asn Asn Arg Val Val Val Ser Ser Asp Ile Leu Val Asn Asn  
7060 7065 7070

<210> 7252  
<211> 7072  
<212> PRT  
<213> SARS coronavirus

<400> 7252  
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1 5 10 15

Ser Leu Pro Val Leu Gln Val Arg Asp Val Leu Val Arg Gly Phe Gly  
20 25 30

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Asp Ser Val Glu Glu Ala Leu Ser Glu Ala Arg Glu His Leu Lys Asn  
 35 40 45  
 Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val Leu Pro Gln Leu  
 50 55 60  
 Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala Leu Ser Thr Asn  
 65 70 75 80  
 His Gly His Lys Val Val Glu Leu Val Ala Glu Met Asp Gly Ile Gln  
 85 90 95  
 Tyr Gly Arg Ser Gly Ile Thr Leu Gly Val Leu Val Pro His Val Gly  
 100 105 110  
 Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg Lys Asn Gly Asn  
 115 120 125  
 Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu Lys Ser Tyr Asp  
 130 135 140  
 Leu Gly Asp Glu Leu Gly Thr Asp Pro Ile Glu Asp Tyr Glu Gln Asn  
 145 150 155 160  
 Trp Asn Thr Lys His Gly Ser Gly Ala Leu Arg Glu Leu Thr Arg Glu  
 165 170 175  
 Leu Asn Gly Gly Ala Val Thr Arg Tyr Val Asp Asn Asn Phe Cys Gly  
 180 185 190  
 Pro Asp Gly Tyr Pro Leu Asp Cys Ile Lys Asp Phe Leu Ala Arg Ala  
 195 200 205  
 Gly Lys Ser Met Cys Thr Leu Ser Glu Gln Leu Asp Tyr Ile Glu Ser  
 210 215 220  
 Lys Arg Gly Val Tyr Cys Cys Arg Asp His Glu His Glu Ile Ala Trp  
 225 230 235 240  
 Phe Thr Glu Arg Ser Asp Lys Ser Tyr Glu His Gln Thr Pro Phe Glu  
 245 250 255  
 Ile Lys Ser Ala Lys Lys Phe Asp Thr Phe Lys Gly Glu Cys Pro Lys  
 260 265 270  
 Phe Val Phe Pro Leu Asn Ser Lys Val Lys Val Ile Gln Pro Arg Val  
 275 280 285  
 Glu Lys Lys Lys Thr Glu Gly Phe Met Gly Arg Ile Arg Ser Val Tyr  
 290 295 300  
 Pro Val Ala Ser Pro Gln Glu Cys Asn Asn Met His Leu Ser Thr Leu  
 305 310 315 320  
 Met Lys Cys Asn His Cys Asp Glu Val Ser Trp Gln Thr Cys Asp Phe  
 325 330 335  
 Leu Lys Ala Thr Cys Glu His Cys Gly Thr Glu Asn Leu Val Ile Glu  
 340 345 350  
 Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met  
 355 360 365

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Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val  
370 375 380  
Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly  
385 390 395 400  
Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys  
405 410 415  
Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly  
420 425 430  
Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu  
435 440 445  
Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val  
450 455 460  
Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe  
465 470 475 480  
Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr  
485 490 495  
Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr  
500 505 510  
Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser  
515 520 525  
Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala Ala Gly Val Ile  
530 535 540  
Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pro  
545 550 555 560  
Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln  
565 570 575  
Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser Asp Leu Leu Thr  
580 585 590  
Asn Ser Val Ile Ile Met Ala Tyr Val Thr Gly Gly Leu Val Gln Gln  
595 600 605  
Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr Val Glu Lys Leu  
610 615 620  
Arg Pro Ile Phe Glu Trp Ile Glu Ala Lys Leu Ser Ala Gly Val Glu  
625 630 635 640  
Phe Leu Lys Asp Ala Trp Glu Ile Leu Lys Phe Leu Ile Thr Gly Val  
645 650 655  
Phe Asp Ile Val Lys Gly Gln Ile Gln Val Ala Ser Asp Asn Ile Lys  
660 665 670  
Asp Cys Val Lys Cys Phe Ile Asp Val Val Asn Lys Ala Leu Glu Met  
675 680 685  
Cys Ile Asp Gln Val Thr Ile Ala Gly Ala Lys Leu Arg Ser Leu Asn  
690 695 700

SEQLIST-20480.TXT

Leu Gly Glu Val Phe Ile Ala Gln Ser Lys Gly Leu Tyr Arg Gln Cys  
 705 710 715 720  
 Ile Arg Gly Lys Glu Gln Leu Gln Leu Leu Met Pro Leu Lys Ala Pro  
 725 730 735  
 Lys Glu Val Thr Phe Leu Glu Gly Asp Ser His Asp Thr Val Leu Thr  
 740 745 750  
 Ser Glu Glu Val Val Leu Lys Asn Gly Glu Leu Glu Ala Leu Glu Thr  
 755 760 765  
 Pro Val Asp Ser Phe Thr Asn Gly Ala Ile Val Gly Thr Pro Val Cys  
 770 775 780  
 Val Asn Gly Leu Met Leu Leu Glu Ile Lys Asp Lys Glu Gln Tyr Cys  
 785 790 795 800  
 Ala Leu Ser Pro Gly Leu Leu Ala Thr Asn Asn Val Phe Arg Leu Lys  
 805 810 815  
 Gly Gly Ala Pro Ile Lys Gly Val Thr Phe Gly Glu Asp Thr Val Trp  
 820 825 830  
 Glu Val Gln Gly Tyr Lys Asn Val Arg Ile Thr Phe Glu Leu Asp Glu  
 835 840 845  
 Arg Val Asp Lys Val Leu Asn Glu Lys Cys Ser Val Tyr Thr Val Glu  
 850 855 860  
 Ser Gly Thr Glu Val Thr Glu Phe Ala Cys Val Val Ala Glu Ala Val  
 865 870 875 880  
 Val Lys Thr Leu Gln Pro Val Ser Asp Leu Leu Thr Asn Met Gly Ile  
 885 890 895  
 Asp Leu Asp Glu Trp Ser Val Ala Thr Phe Tyr Leu Phe Asp Asp Ala  
 900 905 910  
 Gly Glu Glu Asn Phe Ser Ser Arg Met Tyr Cys Ser Phe Tyr Pro Pro  
 915 920 925  
 Asp Glu Glu Glu Glu Asp Asp Ala Glu Cys Glu Glu Glu Glu Ile Asp  
 930 935 940  
 Glu Thr Cys Glu His Glu Tyr Gly Thr Glu Asp Asp Tyr Gln Gly Leu  
 945 950 955 960  
 Pro Leu Glu Phe Gly Ala Ser Ala Glu Thr Val Arg Val Glu Glu Glu  
 965 970 975  
 Glu Glu Glu Asp Trp Leu Asp Asp Thr Thr Glu Gln Ser Glu Ile Glu  
 980 985 990  
 Pro Glu Pro Glu Pro Thr Pro Glu Glu Pro Val Asn Gln Phe Thr Gly  
 995 1000 1005  
 Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Ile Val  
 1010 1015 1020  
 Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala Ala Asn  
 1025 1030 1035 1040



SEQLIST-20480.TXT

Ile His Leu Lys His Gly Gly Gly Val Ala Gly Ala Leu Asn Lys Ala  
1045 1050 1055

Thr Asn Gly Ala Met Gln Lys Glu Ser Asp Asp Tyr Ile Lys Leu Asn  
1060 1065 1070

Gly Pro Leu Thr Val Gly Gly Ser Cys Leu Leu Ser Gly His Asn Leu  
1075 1080 1085

Ala Lys Lys Cys Leu His Val Val Gly Pro Asn Leu Asn Ala Gly Glu  
1090 1095 1100

Asp Ile Gln Leu Leu Lys Ala Ala Tyr Glu Asn Phe Asn Ser Gln Asp  
1105 1110 1115 1120

Ile Leu Leu Ala Pro Leu Leu Ser Ala Gly Ile Phe Gly Ala Lys Pro  
1125 1130 1135

Leu Gln Ser Leu Gln Val Cys Val Gln Thr Val Arg Thr Gln Val Tyr  
1140 1145 1150

Ile Ala Val Asn Asp Lys Ala Leu Tyr Glu Gln Val Val Met Asp Tyr  
1155 1160 1165

Leu Asp Asn Leu Lys Pro Arg Val Glu Ala Pro Lys Gln Glu Glu Pro  
1170 1175 1180

Pro Asn Thr Glu Asp Ser Lys Thr Glu Glu Lys Ser Val Val Gln Lys  
1185 1190 1195 1200

Pro Val Asp Val Lys Pro Lys Ile Lys Ala Cys Ile Asp Glu Val Thr  
1205 1210 1215

Thr Thr Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys Leu Leu Leu Phe  
1220 1225 1230

Ala Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln Asn Met Leu Arg  
1235 1240 1245

Gly Glu Asp Met Ser Phe Leu Glu Lys Asp Ala Pro Tyr Met Val Gly  
1250 1255 1260

Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val Ile Pro Ser Lys  
1265 1270 1275 1280

Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala Leu Lys Lys Val  
1285 1290 1295

Pro Val Asp Glu Tyr Ile Thr Thr Tyr Pro Gly Gln Gly Cys Ala Gly  
1300 1305 1310

Tyr Thr Leu Glu Glu Ala Lys Thr Ala Leu Lys Lys Cys Lys Ser Ala  
1315 1320 1325

Phe Tyr Val Leu Pro Ser Glu Ala Pro Asn Ala Lys Glu Glu Ile Leu  
1330 1335 1340

Gly Thr Val Ser Trp Asn Leu Arg Glu Met Leu Ala His Ala Glu Glu  
1345 1350 1355 1360

Thr Arg Lys Leu Met Pro Ile Cys Met Asp Val Arg Ala Ile Met Ala  
1365 1370 1375

SEQLIST-20480.TXT

Thr Ile Gln Arg Lys Tyr Lys Gly Ile Lys Ile Gln Glu Gly Ile Val  
1380 1385 1390

Asp Tyr Gly Val Arg Phe Phe Phe Tyr Thr Ser Lys Glu Pro Val Ala  
1395 1400 1405

Ser Ile Ile Thr Lys Leu Asn Ser Leu Asn Glu Pro Leu Val Thr Met  
1410 1415 1420

Pro Ile Gly Tyr Val Thr His Gly Phe Asn Leu Glu Glu Ala Ala Arg  
1425 1430 1435 1440

Cys Met Arg Ser Leu Lys Ala Pro Ala Val Val Ser Val Ser Ser Pro  
1445 1450 1455

Asp Ala Val Thr Thr Tyr Asn Gly Tyr Leu Thr Ser Ser Ser Lys Thr  
1460 1465 1470

Ser Glu Glu His Phe Val Glu Thr Val Ser Leu Ala Gly Ser Tyr Arg  
1475 1480 1485

Asp Trp Ser Tyr Ser Gly Gln Arg Thr Glu Leu Gly Val Glu Phe Leu  
1490 1495 1500

Lys Arg Gly Asp Lys Ile Val Tyr His Thr Leu Glu Ser Pro Val Glu  
1505 1510 1515 1520

Phe His Leu Asp Gly Glu Val Leu Ser Leu Asp Lys Leu Lys Ser Leu  
1525 1530 1535

Leu Ser Leu Arg Glu Val Lys Thr Ile Lys Val Phe Thr Thr Val Asp  
1540 1545 1550

Asn Thr Asn Leu His Thr Gln Leu Val Asp Met Ser Met Thr Tyr Gly  
1555 1560 1565

Gln Gln Phe Gly Pro Thr Tyr Leu Asp Gly Ala Asp Val Thr Lys Ile  
1570 1575 1580

Lys Pro His Val Asn His Glu Gly Lys Thr Phe Phe Val Leu Pro Ser  
1585 1590 1595 1600

Asp Asp Thr Leu Arg Ser Glu Ala Phe Glu Tyr Tyr His Thr Leu Asp  
1605 1610 1615

Glu Ser Phe Leu Gly Arg Tyr Met Ser Ala Leu Asn His Thr Lys Lys  
1620 1625 1630

Trp Lys Phe Pro Gln Val Gly Gly Leu Thr Ser Ile Lys Trp Ala Asp  
1635 1640 1645

Asn Asn Cys Tyr Leu Ser Ser Val Leu Leu Ala Leu Gln Gln Leu Glu  
1650 1655 1660

Val Lys Phe Asn Ala Pro Ala Leu Gln Glu Ala Tyr Tyr Arg Ala Arg  
1665 1670 1675 1680

Ala Gly Asp Ala Ala Asn Phe Cys Ala Leu Ile Leu Ala Tyr Ser Asn  
1685 1690 1695

Lys Thr Val Gly Glu Leu Gly Asp Val Arg Glu Thr Met Thr His Leu  
1700 1705 1710

SEQLIST-20480.TXT

Leu Gln His Ala Asn Leu Glu Ser Ala Lys Arg Val Leu Asn Val Val  
1715 1720 1725

Cys Lys His Cys Gly Gln Lys Thr Thr Thr Leu Thr Gly Val Glu Ala  
1730 1735 1740

Val Met Tyr Met Gly Thr Leu Ser Tyr Asp Asn Leu Lys Thr Gly Val  
1745 1750 1755 1760

Ser Ile Pro Cys Val Cys Gly Arg Asp Ala Thr Gln Tyr Leu Val Gln  
1765 1770 1775

Gln Glu Ser Ser Phe Val Met Met Ser Ala Pro Pro Ala Glu Tyr Lys  
1780 1785 1790

Leu Gln Gln Gly Thr Phe Leu Cys Ala Asn Glu Tyr Thr Gly Asn Tyr  
1795 1800 1805

Gln Cys Gly His Tyr Thr His Ile Thr Ala Lys Glu Thr Leu Tyr Arg  
1810 1815 1820

Ile Asp Gly Ala His Leu Thr Lys Met Ser Glu Tyr Lys Gly Pro Val  
1825 1830 1835 1840

Thr Asp Val Phe Tyr Lys Glu Thr Ser Tyr Thr Thr Thr Ile Lys Pro  
1845 1850 1855

Val Ser Tyr Lys Leu Asp Gly Val Thr Tyr Thr Glu Ile Glu Pro Lys  
1860 1865 1870

Leu Asp Gly Tyr Tyr Lys Lys Asp Asn Ala Tyr Tyr Thr Glu Gln Pro  
1875 1880 1885

Ile Asp Leu Val Pro Thr Gln Pro Leu Pro Asn Ala Ser Phe Asp Asn  
1890 1895 1900

Phe Lys Leu Thr Cys Ser Asn Thr Lys Phe Ala Asp Asp Leu Asn Gln  
1905 1910 1915 1920

Met Thr Gly Phe Thr Lys Pro Ala Ser Arg Glu Leu Ser Val Thr Phe  
1925 1930 1935

Phe Pro Asp Leu Asn Gly Asp Val Val Ala Ile Asp Tyr Arg His Tyr  
1940 1945 1950

Ser Ala Ser Phe Lys Lys Gly Ala Lys Leu Leu His Lys Pro Ile Val  
1955 1960 1965

Trp His Ile Asn Gln Ala Thr Thr Lys Thr Thr Phe Lys Pro Asn Thr  
1970 1975 1980

Trp Cys Leu Arg Cys Leu Trp Ser Thr Lys Pro Val Asp Thr Ser Asn  
1985 1990 1995 2000

Ser Phe Glu Val Leu Ala Val Glu Asp Thr Gln Gly Met Asp Asn Leu  
2005 2010 2015

Ala Cys Glu Ser Gln Gln Pro Thr Ser Glu Glu Val Val Glu Asn Pro  
2020 2025 2030

Thr Ile Gln Lys Glu Val Ile Glu Cys Asp Val Lys Thr Thr Glu Val  
2035 2040 2045

SEQLIST-20480.TXT

Val Gly Asn Val Ile Leu Lys Pro Ser Asp Glu Gly Val Lys Val Thr  
2050 2055 2060

Gln Glu Leu Gly His Glu Asp Leu Met Ala Ala Tyr Val Glu Asn Thr  
2065 2070 2075 2080

Ser Ile Thr Ile Lys Lys Pro Asn Glu Leu Ser Leu Ala Leu Gly Leu  
2085 2090 2095

Lys Thr Ile Ala Thr His Gly Ile Ala Ala Ile Asn Ser Val Pro Trp  
2100 2105 2110

Ser Lys Ile Leu Ala Tyr Val Lys Pro Phe Leu Gly Gln Ala Ala Ile  
2115 2120 2125

Thr Thr Ser Asn Cys Ala Lys Arg Leu Ala Gln Arg Val Phe Asn Asn  
2130 2135 2140

Tyr Met Pro Tyr Val Phe Thr Leu Leu Phe Gln Leu Cys Thr Phe Thr  
2145 2150 2155 2160

Lys Ser Thr Asn Ser Arg Ile Arg Ala Ser Leu Pro Thr Thr Ile Ala  
2165 2170 2175

Lys Asn Ser Val Lys Ser Val Ala Lys Leu Cys Leu Asp Ala Gly Ile  
2180 2185 2190

Asn Tyr Val Lys Ser Pro Lys Phe Ser Lys Leu Phe Thr Ile Ala Met  
2195 2200 2205

Trp Leu Leu Leu Leu Ser Ile Cys Leu Gly Ser Leu Ile Cys Val Thr  
2210 2215 2220

Ala Ala Phe Gly Val Leu Leu Ser Asn Phe Gly Ala Pro Ser Tyr Cys  
2225 2230 2235 2240

Asn Gly Val Arg Glu Leu Tyr Leu Asn Ser Ser Asn Val Thr Thr Met  
2245 2250 2255

Asp Phe Cys Glu Gly Ser Phe Pro Cys Ser Ile Cys Leu Ser Gly Leu  
2260 2265 2270

Asp Ser Leu Asp Ser Tyr Pro Ala Leu Glu Thr Ile Gln Val Thr Ile  
2275 2280 2285

Ser Ser Tyr Lys Leu Asp Leu Thr Ile Leu Gly Leu Ala Ala Glu Trp  
2290 2295 2300

Val Leu Ala Tyr Met Leu Phe Thr Lys Phe Phe Tyr Leu Leu Gly Leu  
2305 2310 2315 2320

Ser Ala Ile Met Gln Val Phe Phe Gly Tyr Phe Ala Ser His Phe Ile  
2325 2330 2335

Ser Asn Ser Trp Leu Met Trp Phe Ile Ile Ser Ile Val Gln Met Ala  
2340 2345 2350

Pro Val Ser Ala Met Val Arg Met Tyr Ile Phe Phe Ala Ser Phe Tyr  
2355 2360 2365

Tyr Ile Trp Lys Ser Tyr Val His Ile Met Asp Gly Cys Thr Ser Ser  
2370 2375 2380

SEQLIST-20480.TXT

Thr Cys Met Met Cys Tyr Lys Arg Asn Arg Ala Thr Arg Val Glu Cys  
 2385 2390 2395 2400  
 Thr Thr Ile Val Asn Gly Met Lys Arg Ser Phe Tyr Val Tyr Ala Asn  
 2405 2410 2415  
 Gly Gly Arg Gly Phe Cys Lys Thr His Asn Trp Asn Cys Leu Asn Cys  
 2420 2425 2430  
 Asp Thr Phe Cys Thr Gly Ser Thr Phe Ile Ser Asp Glu Val Ala Arg  
 2435 2440 2445  
 Asp Leu Ser Leu Gln Phe Lys Arg Pro Ile Asn Pro Thr Asp Gln Ser  
 2450 2455 2460  
 Ser Tyr Ile Val Asp Ser Val Ala Val Lys Asn Gly Ala Leu His Leu  
 2465 2470 2475 2480  
 Tyr Phe Asp Lys Ala Gly Gln Lys Thr Tyr Glu Arg His Pro Leu Ser  
 2485 2490 2495  
 His Phe Val Asn Leu Asp Asn Leu Arg Ala Asn Asn Thr Lys Gly Ser  
 2500 2505 2510  
 Leu Pro Ile Asn Val Ile Val Phe Asp Gly Lys Ser Lys Cys Asp Glu  
 2515 2520 2525  
 Ser Ala Ser Lys Ser Ala Ser Val Tyr Tyr Ser Gln Leu Met Cys Gln  
 2530 2535 2540  
 Pro Ile Leu Leu Leu Asp Gln Ala Leu Val Ser Asp Val Gly Asp Ser  
 2545 2550 2555 2560  
 Thr Glu Val Ser Val Lys Met Phe Asp Ala Tyr Val Asp Thr Phe Ser  
 2565 2570 2575  
 Ala Thr Phe Ser Val Pro Met Glu Lys Leu Lys Ala Leu Val Ala Thr  
 2580 2585 2590  
 Ala His Ser Glu Leu Ala Lys Gly Val Ala Leu Asp Gly Val Leu Ser  
 2595 2600 2605  
 Thr Phe Val Ser Ala Ala Arg Gln Gly Val Val Asp Thr Asp Val Asp  
 2610 2615 2620  
 Thr Lys Asp Val Ile Glu Cys Leu Lys Leu Ser His His Ser Asp Leu  
 2625 2630 2635 2640  
 Glu Val Thr Gly Asp Ser Cys Asn Asn Phe Met Leu Thr Tyr Asn Lys  
 2645 2650 2655  
 Val Glu Asn Met Thr Pro Arg Asp Leu Gly Ala Cys Ile Asp Cys Asn  
 2660 2665 2670  
 Ala Arg His Ile Asn Ala Gln Val Ala Lys Ser His Asn Val Ser Leu  
 2675 2680 2685  
 Ile Trp Asn Val Lys Asp Tyr Met Ser Leu Ser Glu Gln Leu Arg Lys  
 2690 2695 2700  
 Gln Ile Arg Ser Ala Ala Lys Lys Asn Asn Ile Pro Phe Arg Leu Thr  
 2705 2710 2715 2720

SEQLIST-20480.TXT

Cys Ala Thr Thr Arg Gln Val Val Asn Val Ile Thr Thr Lys Ile Ser  
2725 2730 2735

Leu Lys Gly Gly Lys Ile Val Ser Thr Cys Phe Lys Leu Met Leu Lys  
2740 2745 2750

Ala Thr Leu Leu Cys Val Leu Ala Ala Leu Val Cys Tyr Ile Val Met  
2755 2760 2765

Pro Val His Thr Leu Ser Ile His Asp Gly Tyr Thr Asn Glu Ile Ile  
2770 2775 2780

Gly Tyr Lys Ala Ile Gln Asp Gly Val Thr Arg Asp Ile Ile Ser Thr  
2785 2790 2795 2800

Asp Asp Cys Phe Ala Asn Lys His Ala Gly Phe Asp Ala Trp Phe Ser  
2805 2810 2815

Gln Arg Gly Gly Ser Tyr Lys Asn Asp Lys Ser Cys Pro Val Val Ala  
2820 2825 2830

Ala Ile Ile Thr Arg Glu Ile Gly Phe Ile Val Pro Gly Leu Pro Gly  
2835 2840 2845

Thr Val Leu Arg Ala Ile Asn Gly Asp Phe Leu His Phe Leu Pro Arg  
2850 2855 2860

Val Phe Ser Ala Val Gly Asn Ile Cys Tyr Thr Pro Ser Lys Leu Ile  
2865 2870 2875 2880

Glu Tyr Ser Asp Phe Ala Thr Ser Ala Cys Val Leu Ala Ala Glu Cys  
2885 2890 2895

Thr Ile Phe Lys Asp Ala Met Gly Lys Pro Val Pro Tyr Cys Tyr Asp  
2900 2905 2910

Thr Asn Leu Leu Glu Gly Ser Ile Ser Tyr Ser Glu Leu Arg Pro Asp  
2915 2920 2925

Thr Arg Tyr Val Leu Met Asp Gly Ser Ile Ile Gln Phe Pro Asn Thr  
2930 2935 2940

Tyr Leu Glu Gly Ser Val Arg Val Val Thr Thr Phe Asp Ala Glu Tyr  
2945 2950 2955 2960

Cys Arg His Gly Thr Cys Glu Arg Ser Glu Val Gly Ile Cys Leu Ser  
2965 2970 2975

Thr Ser Gly Arg Trp Val Leu Asn Asn Glu His Tyr Arg Ala Leu Ser  
2980 2985 2990

Gly Val Phe Cys Gly Val Asp Ala Met Asn Leu Ile Ala Asn Ile Phe  
2995 3000 3005

Thr Pro Leu Val Gln Pro Val Gly Ala Leu Asp Val Ser Ala Ser Val  
3010 3015 3020

Val Ala Gly Gly Ile Ile Ala Ile Leu Val Thr Cys Ala Ala Tyr Tyr  
3025 3030 3035 3040

Phe Met Lys Phe Arg Arg Val Phe Gly Glu Tyr Asn His Val Val Ala  
3045 3050 3055

SEQLIST-20480.TXT

Ala Asn Ala Leu Leu Phe Leu Met Ser Phe Thr Ile Leu Cys Leu Val  
3060 3065 3070

Pro Ala Tyr Ser Phe Leu Pro Gly Val Tyr Ser Val Phe Tyr Leu Tyr  
3075 3080 3085

Leu Thr Phe Tyr Phe Thr Asn Asp Val Ser Phe Leu Ala His Leu Gln  
3090 3095 3100

Trp Phe Ala Met Phe Ser Pro Ile Val Pro Phe Trp Ile Thr Ala Ile  
3105 3110 3115 3120

Tyr Val Phe Cys Ile Ser Leu Lys His Cys His Trp Phe Phe Asn Asn  
3125 3130 3135

Tyr Leu Arg Lys Arg Val Met Phe Asn Gly Val Thr Phe Ser Thr Phe  
3140 3145 3150

Glu Glu Ala Ala Leu Cys Thr Phe Leu Leu Asn Lys Glu Met Tyr Leu  
3155 3160 3165

Lys Leu Arg Ser Glu Thr Leu Leu Pro Leu Thr Gln Tyr Asn Arg Tyr  
3170 3175 3180

Leu Ala Leu Tyr Asn Lys Tyr Lys Tyr Phe Ser Gly Ala Leu Asp Thr  
3185 3190 3195 3200

Thr Ser Tyr Arg Glu Ala Ala Cys Cys His Leu Ala Lys Ala Leu Asn  
3205 3210 3215

Asp Phe Ser Asn Ser Gly Ala Asp Val Leu Tyr Gln Pro Pro Gln Thr  
3220 3225 3230

Ser Ile Thr Ser Ala Val Leu Gln Ser Gly Phe Arg Lys Met Ala Phe  
3235 3240 3245

Pro Ser Gly Lys Val Glu Gly Cys Met Val Gln Val Thr Cys Gly Thr  
3250 3255 3260

Thr Thr Leu Asn Gly Leu Trp Leu Asp Asp Thr Val Tyr Cys Pro Arg  
3265 3270 3275 3280

His Val Ile Cys Thr Ala Glu Asp Met Leu Asn Pro Asn Tyr Glu Asp  
3285 3290 3295

Leu Leu Ile Arg Lys Ser Asn His Ser Phe Leu Val Gln Ala Gly Asn  
3300 3305 3310

Val Gln Leu Arg Val Ile Gly His Ser Met Gln Asn Cys Leu Leu Arg  
3315 3320 3325

Leu Lys Val Asp Thr Ser Asn Pro Lys Thr Pro Lys Tyr Lys Phe Val  
3330 3335 3340

Arg Ile Gln Pro Gly Gln Thr Phe Ser Val Leu Ala Cys Tyr Asn Gly  
3345 3350 3355 3360

Ser Pro Ser Gly Val Tyr Gln Cys Ala Met Arg Pro Asn His Thr Ile  
3365 3370 3375

Lys Gly Ser Phe Leu Asn Gly Ser Cys Gly Ser Val Gly Phe Asn Ile  
3380 3385 3390

SEQLIST-20480.TXT

Asp Tyr Asp Cys Val Ser Phe Cys Tyr Met His His Met Glu Leu Pro  
 3395 3400 3405  
 Thr Gly Val His Ala Gly Thr Asp Leu Glu Gly Lys Phe Tyr Gly Pro  
 3410 3415 3420  
 Phe Val Asp Arg Gln Thr Ala Gln Ala Ala Gly Thr Asp Thr Thr Ile  
 3425 3430 3435 3440  
 Thr Leu Asn Val Leu Ala Trp Leu Tyr Ala Ala Val Ile Asn Gly Asp  
 3445 3450 3455  
 Arg Trp Phe Leu Asn Arg Phe Thr Thr Thr Leu Asn Asp Phe Asn Leu  
 3460 3465 3470  
 Val Ala Met Lys Tyr Asn Tyr Glu Pro Leu Thr Gln Asp His Val Asp  
 3475 3480 3485  
 Ile Leu Gly Pro Leu Ser Ala Gln Thr Gly Ile Ala Val Leu Asp Met  
 3490 3495 3500  
 Cys Ala Ala Leu Lys Glu Leu Leu Gln Asn Gly Met Asn Gly Arg Thr  
 3505 3510 3515 3520  
 Ile Leu Gly Ser Thr Ile Leu Glu Asp Glu Phe Thr Pro Phe Asp Val  
 3525 3530 3535  
 Val Arg Gln Cys Ser Gly Val Thr Phe Gln Gly Lys Phe Lys Lys Ile  
 3540 3545 3550  
 Val Lys Gly Thr His His Trp Met Leu Leu Thr Phe Leu Thr Ser Leu  
 3555 3560 3565  
 Leu Ile Leu Val Gln Ser Thr Gln Trp Ser Leu Phe Phe Phe Val Tyr  
 3570 3575 3580  
 Glu Asn Ala Phe Leu Pro Phe Thr Leu Gly Ile Met Ala Ile Ala Ala  
 3585 3590 3600  
 Cys Ala Met Leu Leu Val Lys His Lys His Ala Phe Leu Cys Leu Phe  
 3605 3610 3615  
 Leu Leu Pro Ser Leu Ala Thr Val Ala Tyr Phe Asn Met Val Tyr Met  
 3620 3625 3630  
 Pro Ala Ser Trp Val Met Arg Ile Met Thr Trp Leu Glu Leu Ala Asp  
 3635 3640 3645  
 Thr Ser Leu Ser Gly Tyr Arg Leu Lys Asp Cys Val Met Tyr Ala Ser  
 3650 3655 3660  
 Ala Leu Val Leu Leu Ile Leu Met Thr Ala Arg Thr Val Tyr Asp Asp  
 3665 3670 3675 3680  
 Ala Ala Arg Arg Val Trp Thr Leu Met Asn Val Ile Thr Leu Val Tyr  
 3685 3690 3695  
 Lys Val Tyr Tyr Gly Asn Ala Leu Asp Gln Ala Ile Ser Met Trp Ala  
 3700 3705 3710  
 Leu Val Ile Ser Val Thr Ser Asn Tyr Ser Gly Val Val Thr Thr Ile  
 3715 3720 3725



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Met Phe Leu Ala Arg Ala Ile Val Phe Val Cys Val Glu Tyr Tyr Pro  
3730 3735 3740

Leu Leu Phe Ile Thr Gly Asn Thr Leu Gln Cys Ile Met Leu Val Tyr  
3745 3750 3755 3760

Cys Phe Leu Gly Tyr Cys Cys Cys Cys Tyr Phe Gly Leu Phe Cys Leu  
3765 3770 3775

Leu Asn Arg Tyr Phe Arg Leu Thr Leu Gly Val Tyr Asp Tyr Leu Val  
3780 3785 3790

Ser Thr Gln Glu Phe Arg Tyr Met Asn Ser Gln Gly Leu Leu Pro Pro  
3795 3800 3805

Lys Ser Ser Ile Asp Ala Phe Lys Leu Asn Ile Lys Leu Leu Gly Ile  
3810 3815 3820

Gly Gly Lys Pro Cys Ile Lys Val Ala Thr Val Gln Ser Lys Met Ser  
3825 3830 3835 3840

Asp Val Lys Cys Thr Ser Val Val Leu Leu Ser Val Leu Gln Gln Leu  
3845 3850 3855

Arg Val Glu Ser Ser Ser Lys Leu Trp Ala Gln Cys Val Gln Leu His  
3860 3865 3870

Asn Asp Ile Leu Leu Ala Lys Asp Thr Thr Glu Ala Phe Glu Lys Met  
3875 3880 3885

Val Ser Leu Leu Ser Val Leu Leu Ser Met Gln Gly Ala Val Asp Ile  
3890 3895 3900

Asn Arg Leu Cys Glu Glu Met Leu Asp Asn Arg Ala Thr Leu Gln Ala  
3905 3910 3915 3920

Ile Ala Ser Glu Phe Ser Ser Leu Pro Ser Tyr Ala Ala Tyr Ala Thr  
3925 3930 3935

Ala Gln Glu Ala Tyr Glu Gln Ala Val Ala Asn Gly Asp Ser Glu Val  
3940 3945 3950

Val Leu Lys Lys Leu Lys Lys Ser Leu Asn Val Ala Lys Ser Glu Phe  
3955 3960 3965

Asp Arg Asp Ala Ala Met Gln Arg Lys Leu Glu Lys Met Ala Asp Gln  
3970 3975 3980

Ala Met Thr Gln Met Tyr Lys Gln Ala Arg Ser Glu Asp Lys Arg Ala  
3985 3990 3995 4000

Lys Val Thr Ser Ala Met Gln Thr Met Leu Phe Thr Met Leu Arg Lys  
4005 4010 4015

Leu Asp Asn Asp Ala Leu Asn Asn Ile Ile Asn Asn Ala Arg Asp Gly  
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Cys Val Pro Leu Asn Ile Ile Pro Leu Thr Thr Ala Ala Lys Leu Met  
4035 4040 4045

Val Val Val Pro Asp Tyr Gly Thr Tyr Lys Asn Thr Cys Asp Gly Asn  
4050 4055 4060

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Thr Phe Thr Tyr Ala Ser Ala Leu Trp Glu Ile Gln Gln Val Val Asp  
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Ala Asp Ser Lys Ile Val Gln Leu Ser Glu Ile Asn Met Asp Asn Ser  
4085 4090 4095

Pro Asn Leu Ala Trp Pro Leu Ile Val Thr Ala Leu Arg Ala Asn Ser  
4100 4105 4110

Ala Val Lys Leu Gln Asn Asn Glu Leu Ser Pro Val Ala Leu Arg Gln  
4115 4120 4125

Met Ser Cys Ala Ala Gly Thr Thr Gln Thr Ala Cys Thr Asp Asp Asn  
4130 4135 4140

Ala Leu Ala Tyr Tyr Asn Asn Ser Lys Gly Gly Arg Phe Val Leu Ala  
4145 4150 4155 4160

Leu Leu Ser Asp His Gln Asp Leu Lys Trp Ala Arg Phe Pro Lys Ser  
4165 4170 4175

Asp Gly Thr Gly Thr Ile Tyr Thr Glu Leu Glu Pro Pro Cys Arg Phe  
4180 4185 4190

Val Thr Asp Thr Pro Lys Gly Pro Lys Val Lys Tyr Leu Tyr Phe Ile  
4195 4200 4205

Lys Gly Leu Asn Asn Leu Asn Arg Gly Met Val Leu Gly Ser Leu Ala  
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Ala Thr Val Arg Leu Gln Ala Gly Asn Ala Thr Glu Val Pro Ala Asn  
4225 4230 4235 4240

Ser Thr Val Leu Ser Phe Cys Ala Phe Ala Val Asp Pro Ala Lys Ala  
4245 4250 4255

Tyr Lys Asp Tyr Leu Ala Ser Gly Gly Gln Pro Ile Thr Asn Cys Val  
4260 4265 4270

Lys Met Leu Cys Thr His Thr Gly Thr Gly Gln Ala Ile Thr Val Thr  
4275 4280 4285

Pro Glu Ala Asn Met Asp Gln Glu Ser Phe Gly Gly Ala Ser Cys Cys  
4290 4295 4300

Leu Tyr Cys Arg Cys His Ile Asp His Pro Asn Pro Lys Gly Phe Cys  
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Asp Leu Lys Gly Lys Tyr Val Gln Ile Pro Thr Thr Cys Ala Asn Asp  
4325 4330 4335

Pro Val Gly Phe Thr Leu Arg Asn Thr Val Cys Thr Val Cys Gly Met  
4340 4345 4350

Trp Lys Gly Tyr Gly Cys Ser Cys Asp Gln Leu Arg Glu Pro Leu Met  
4355 4360 4365

Gln Ser Ala Asp Ala Ser Thr Phe Leu Asn Arg Val Gly Val Ser Ala  
4370 4375 4380

Ala Arg Leu Thr Pro Cys Gly Thr Gly Thr Ser Thr Asp Val Val Tyr  
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SEQLIST-20480.TXT

Arg Ala Phe Asp Ile Tyr Asn Glu Lys Val Ala Gly Phe Ala Lys Phe  
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Leu Lys Thr Asn Cys Cys Arg Phe Gln Glu Lys Asp Glu Glu Gly Asn  
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Leu Leu Asp Ser Tyr Phe Val Val Lys Arg His Thr Met Ser Asn Tyr  
4435 4440 4445

Gln His Glu Glu Thr Ile Tyr Asn Leu Val Lys Asp Cys Pro Ala Val  
4450 4455 4460

Ala Val His Asp Phe Phe Lys Phe Arg Val Asp Gly Asp Met Val Pro  
4465 4470 4475 4480

His Ile Ser Arg Gln Arg Leu Thr Lys Tyr Thr Met Ala Asp Leu Val  
4485 4490 4495

Tyr Ala Leu Arg His Phe Asp Glu Gly Asn Cys Asp Thr Leu Lys Glu  
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Ile Leu Val Thr Tyr Asn Cys Cys Asp Asp Asp Tyr Phe Asn Lys Lys  
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Asp Trp Tyr Asp Phe Val Glu Asn Pro Asp Ile Leu Arg Val Tyr Ala  
4530 4535 4540

Asn Leu Gly Glu Arg Val Arg Gln Ser Leu Leu Lys Thr Val Gln Phe  
4545 4550 4555 4560

Cys Asp Ala Met Arg Asp Ala Gly Ile Val Gly Val Leu Thr Leu Asp  
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Asn Gln Asp Leu Asn Gly Asn Trp Tyr Asp Phe Gly Asp Phe Val Gln  
4580 4585 4590

Val Ala Pro Gly Cys Gly Val Pro Ile Val Asp Ser Tyr Tyr Ser Leu  
4595 4600 4605

Leu Met Pro Ile Leu Thr Leu Thr Arg Ala Leu Ala Ala Glu Ser His  
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Met Asp Ala Asp Leu Ala Lys Pro Leu Ile Lys Trp Asp Leu Leu Lys  
4625 4630 4635 4640

Tyr Asp Phe Thr Glu Glu Arg Leu Cys Leu Phe Asp Arg Tyr Phe Lys  
4645 4650 4655

Tyr Trp Asp Gln Thr Tyr His Pro Asn Cys Ile Asn Cys Leu Asp Asp  
4660 4665 4670

Arg Cys Ile Leu His Cys Ala Asn Phe Asn Val Leu Phe Ser Thr Val  
4675 4680 4685

Phe Pro Pro Thr Ser Phe Gly Pro Leu Val Arg Lys Ile Phe Val Asp  
4690 4695 4700

Gly Val Pro Phe Val Val Ser Thr Gly Tyr His Phe Arg Glu Leu Gly  
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Val Val His Asn Gln Asp Val Asn Leu His Ser Ser Arg Leu Ser Phe  
4725 4730 4735

SEQLIST-20480.TXT

Lys Glu Leu Leu Val Tyr Ala Ala Asp Pro Ala Met His Ala Ala Ser  
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Gly Asn Leu Leu Leu Asp Lys Arg Thr Thr Cys Phe Ser Val Ala Ala  
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Leu Thr Asn Asn Val Ala Phe Gln Thr Val Lys Pro Gly Asn Phe Asn  
4770 4775 4780

Lys Asp Phe Tyr Asp Phe Ala Val Ser Lys Gly Phe Phe Lys Glu Gly  
4785 4790 4795 4800

Ser Ser Val Glu Leu Lys His Phe Phe Phe Ala Gln Asp Gly Asn Ala  
4805 4810 4815

Ala Ile Ser Asp Tyr Asp Tyr Tyr Arg Tyr Asn Leu Pro Thr Met Cys  
4820 4825 4830

Asp Ile Arg Gln Leu Leu Phe Val Val Glu Val Val Asp Lys Tyr Phe  
4835 4840 4845

Asp Cys Tyr Asp Gly Gly Cys Ile Asn Ala Asn Gln Val Ile Val Asn  
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Asn Leu Asp Lys Ser Ala Gly Phe Pro Phe Asn Lys Trp Gly Lys Ala  
4865 4870 4875 4880

Arg Leu Tyr Tyr Asp Ser Met Ser Tyr Glu Asp Gln Asp Ala Leu Phe  
4885 4890 4895

Ala Tyr Thr Lys Arg Asn Val Ile Pro Thr Ile Thr Gln Met Asn Leu  
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Lys Tyr Ala Ile Ser Ala Lys Asn Arg Ala Arg Thr Val Ala Gly Val  
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Ser Ile Cys Ser Thr Met Thr Asn Arg Gln Phe His Gln Lys Leu Leu  
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Lys Ser Ile Ala Ala Thr Arg Gly Ala Thr Val Val Ile Gly Thr Ser  
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Lys Phe Tyr Gly Gly Trp His Asn Met Leu Lys Thr Val Tyr Ser Asp  
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Val Glu Thr Pro His Leu Met Gly Trp Asp Tyr Pro Lys Cys Asp Arg  
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Ala Met Pro Asn Met Leu Arg Ile Met Ala Ser Leu Val Leu Ala Arg  
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Lys His Asn Thr Cys Cys Asn Leu Ser His Arg Phe Tyr Arg Leu Ala  
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Asn Glu Cys Ala Gln Val Leu Ser Glu Met Val Met Cys Gly Gly Ser  
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Leu Tyr Val Lys Pro Gly Gly Thr Ser Ser Gly Asp Ala Thr Thr Ala  
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Tyr Ala Asn Ser Val Phe Asn Ile Cys Gln Ala Val Thr Ala Asn Val  
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SEQLIST-20480.TXT

Asn Ala Leu Leu Ser Thr Asp Gly Asn Lys Ile Ala Asp Lys Tyr Val  
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Arg Asn Leu Gln His Arg Leu Tyr Glu Cys Leu Tyr Arg Asn Arg Asp  
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Val Asp His Glu Phe Val Asp Glu Phe Tyr Ala Tyr Leu Arg Lys His  
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Phe Ser Met Met Ile Leu Ser Asp Asp Ala Val Val Cys Tyr Asn Ser  
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Asn Tyr Ala Ala Gln Gly Leu Val Ala Ser Ile Lys Asn Phe Lys Ala  
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Val Leu Tyr Tyr Gln Asn Asn Val Phe Met Ser Glu Ala Lys Cys Trp  
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Thr Glu Thr Asp Leu Thr Lys Gly Pro His Glu Phe Cys Ser Gln His  
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Thr Met Leu Val Lys Gln Gly Asp Asp Tyr Val Tyr Leu Pro Tyr Pro  
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Asp Pro Ser Arg Ile Leu Gly Ala Gly Cys Phe Val Asp Asp Ile Val  
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Lys Thr Asp Gly Thr Leu Met Ile Glu Arg Phe Val Ser Leu Ala Ile  
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Asp Ala Tyr Pro Leu Thr Lys His Pro Asn Gln Glu Tyr Ala Asp Val  
5235 5240 5245

Phe His Leu Tyr Leu Gln Tyr Ile Arg Lys Leu His Asp Glu Leu Thr  
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Gly His Met Leu Asp Met Tyr Ser Val Met Leu Thr Asn Asp Asn Thr  
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Ser Arg Tyr Trp Glu Pro Glu Phe Tyr Glu Ala Met Tyr Thr Pro His  
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Thr Val Leu Gln Ala Val Gly Ala Cys Val Leu Cys Asn Ser Gln Thr  
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Ser Leu Arg Cys Gly Ala Cys Ile Arg Arg Pro Phe Leu Cys Cys Lys  
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Cys Cys Tyr Asp His Val Ile Ser Thr Ser His Lys Leu Val Leu Ser  
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Val Asn Pro Tyr Val Cys Asn Ala Pro Gly Cys Asp Val Thr Asp Val  
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Thr Gln Leu Tyr Leu Gly Gly Met Ser Tyr Tyr Cys Lys Ser His Lys  
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Pro Pro Ile Ser Phe Pro Leu Cys Ala Asn Gly Gln Val Phe Gly Leu  
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Tyr Lys Asn Thr Cys Val Gly Ser Asp Asn Val Thr Asp Phe Asn Ala  
5395 5400 5405

SEQLIST-20480.TXT

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Thr Cys Thr Glu Arg Leu Lys Leu Phe Ala Ala Glu Thr Leu Lys Ala  
5425 5430 5435 5440

Thr Glu Glu Thr Phe Lys Leu Ser Tyr Gly Ile Ala Thr Val Arg Glu  
5445 5450 5455

Val Leu Ser Asp Arg Glu Leu His Leu Ser Trp Glu Val Gly Lys Pro  
5460 5465 5470

Arg Pro Pro Leu Asn Arg Asn Tyr Val Phe Thr Gly Tyr Arg Val Thr  
5475 5480 5485

Lys Asn Ser Lys Val Gln Ile Gly Glu Tyr Thr Phe Glu Lys Gly Asp  
5490 5495 5500

Tyr Gly Asp Ala Val Val Tyr Arg Gly Thr Thr Thr Tyr Lys Leu Asn  
5505 5510 5515 5520

Val Gly Asp Tyr Phe Val Leu Thr Ser His Thr Val Met Pro Leu Ser  
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Ala Pro Thr Leu Val Pro Gln Glu His Tyr Val Arg Ile Thr Gly Leu  
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Tyr Pro Thr Leu Asn Ile Ser Asp Glu Phe Ser Ser Asn Val Ala Asn  
5555 5560 5565

Tyr Gln Lys Val Gly Met Gln Lys Tyr Ser Thr Leu Gln Gly Pro Pro  
5570 5575 5580

Gly Thr Gly Lys Ser His Phe Ala Ile Gly Leu Ala Leu Tyr Tyr Pro  
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Ser Ala Arg Ile Val Tyr Thr Ala Cys Ser His Ala Ala Val Asp Ala  
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Leu Cys Glu Lys Ala Leu Lys Tyr Leu Pro Ile Asp Lys Cys Ser Arg  
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Ile Ile Pro Ala Arg Ala Arg Val Glu Cys Phe Asp Lys Phe Lys Val  
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Asn Ser Thr Leu Glu Gln Tyr Val Phe Cys Thr Val Asn Ala Leu Pro  
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Glu Thr Thr Ala Asp Ile Val Val Phe Asp Glu Ile Ser Met Ala Thr  
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Asn Tyr Asp Leu Ser Val Val Asn Ala Arg Leu Arg Ala Lys His Tyr  
5685 5690 5695

Val Tyr Ile Gly Asp Pro Ala Gln Leu Pro Ala Pro Arg Thr Leu Leu  
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Thr Lys Gly Thr Leu Glu Pro Glu Tyr Phe Asn Ser Val Cys Arg Leu  
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Met Lys Thr Ile Gly Pro Asp Met Phe Leu Gly Thr Cys Arg Arg Cys  
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SEQLIST-20480.TXT

Pro Ala Glu Ile Val Asp Thr Val Ser Ala Leu Val Tyr Asp Asn Lys  
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Leu Lys Ala His Lys Asp Lys Ser Ala Gln Cys Phe Lys Met Phe Tyr  
5765 5770 5775

Lys Gly Val Ile Thr His Asp Val Ser Ser Ala Ile Asn Arg Pro Gln  
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Ile Gly Val Val Arg Glu Phe Leu Thr Arg Asn Pro Ala Trp Arg Lys  
5795 5800 5805

Ala Val Phe Ile Ser Pro Tyr Asn Ser Gln Asn Ala Val Ala Ser Lys  
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Ile Leu Gly Leu Pro Thr Gln Thr Val Asp Ser Ser Gln Gly Ser Glu  
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Tyr Asp Tyr Val Ile Phe Thr Gln Thr Thr Glu Thr Ala His Ser Cys  
5845 5850 5855

Asn Val Asn Arg Phe Asn Val Ala Ile Thr Arg Ala Lys Ile Gly Ile  
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Leu Cys Ile Met Ser Asp Arg Asp Leu Tyr Asp Lys Leu Gln Phe Thr  
5875 5880 5885

Ser Leu Glu Ile Pro Arg Arg Asn Val Ala Thr Leu Gln Ala Glu Asn  
5890 5895 5900

Val Thr Gly Leu Phe Lys Asp Cys Ser Lys Ile Ile Thr Gly Leu His  
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Pro Thr Gln Ala Pro Thr His Leu Ser Val Asp Ile Lys Phe Lys Thr  
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Glu Gly Leu Cys Val Asp Ile Pro Gly Ile Pro Lys Asp Met Thr Tyr  
5940 5945 5950

Arg Arg Leu Ile Ser Met Met Gly Phe Lys Met Asn Tyr Gln Val Asn  
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Gly Tyr Pro Asn Met Phe Ile Thr Arg Glu Glu Ala Ile Arg His Val  
5970 5975 5980

Arg Ala Trp Ile Gly Phe Asp Val Glu Gly Cys His Ala Thr Arg Asp  
5985 5990 5995 6000

Ala Val Gly Thr Asn Leu Pro Leu Gln Leu Gly Phe Ser Thr Gly Val  
6005 6010 6015

Asn Leu Val Ala Val Pro Thr Gly Tyr Val Asp Thr Glu Asn Asn Thr  
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Glu Phe Thr Arg Val Asn Ala Lys Pro Pro Pro Gly Asp Gln Phe Lys  
6035 6040 6045

His Leu Ile Pro Leu Met Tyr Lys Gly Leu Pro Trp Asn Val Val Arg  
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Ile Lys Ile Val Gln Met Leu Ser Asp Thr Leu Lys Gly Leu Ser Asp  
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SEQLIST-20480.TXT

Arg Val Val Phe Val Leu Trp Ala His Gly Phe Glu Leu Thr Ser Met  
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Lys Arg Ala Thr Cys Phe Ser Thr Ser Ser Asp Thr Tyr Ala Cys Trp  
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Asn His Ser Val Gly Phe Asp Tyr Val Tyr Asn Pro Phe Met Ile Asp  
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Val Gln Gln Trp Gly Phe Thr Gly Asn Leu Gln Ser Asn His Asp Gln  
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His Cys Gln Val His Gly Asn Ala His Val Ala Ser Cys Asp Ala Ile  
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Met Thr Arg Cys Leu Ala Val His Glu Cys Phe Val Lys Arg Val Asp  
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Trp Ser Val Glu Tyr Pro Ile Ile Gly Asp Glu Leu Arg Val Asn Ser  
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Ala Cys Arg Lys Val Gln His Met Val Val Lys Ser Ala Leu Leu Ala  
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Asp Lys Phe Pro Val Leu His Asp Ile Gly Asn Pro Lys Ala Ile Lys  
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Cys Val Pro Gln Ala Glu Val Glu Trp Lys Phe Tyr Asp Ala Gln Pro  
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Cys Ser Asp Lys Ala Tyr Lys Ile Glu Glu Leu Phe Tyr Ser Tyr Ala  
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Thr His His Asp Lys Phe Thr Asp Gly Val Cys Leu Phe Trp Asn Cys  
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Asn Val Asp Arg Tyr Pro Ala Asn Ala Ile Val Cys Arg Phe Asp Thr  
6290 6295 6300

Arg Val Leu Ser Asn Leu Asn Leu Pro Gly Cys Asp Gly Gly Ser Leu  
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Tyr Val Asn Lys His Ala Phe His Thr Pro Ala Phe Asp Lys Ser Ala  
6325 6330 6335

Phe Thr Asn Leu Lys Gln Leu Pro Phe Phe Tyr Tyr Ser Asp Ser Pro  
6340 6345 6350

Cys Glu Ser His Gly Lys Gln Val Val Ser Asp Ile Asp Tyr Val Pro  
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Leu Lys Ser Ala Thr Cys Ile Thr Arg Cys Asn Leu Gly Gly Ala Val  
6370 6375 6380

Cys Arg His His Ala Asn Glu Tyr Arg Gln Tyr Leu Asp Ala Tyr Asn  
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Met Met Ile Ser Ala Gly Phe Ser Leu Trp Ile Tyr Lys Gln Phe Asp  
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SEQLIST-20480.TXT

Thr Tyr Asn Leu Trp Asn Thr Phe Thr Arg Leu Gln Ser Leu Glu Asn  
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Val Ala Tyr Asn Val Val Asn Lys Gly His Phe Asp Gly His Ala Gly  
6435 6440 6445

Glu Ala Pro Val Ser Ile Ile Asn Asn Ala Val Tyr Thr Lys Val Asp  
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Gly Ile Asp Val Glu Ile Phe Glu Asn Lys Thr Thr Leu Pro Val Asn  
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Val Ala Phe Glu Leu Trp Ala Lys Arg Asn Ile Lys Pro Val Pro Glu  
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Ile Lys Ile Leu Asn Asn Leu Gly Val Asp Ile Ala Ala Asn Thr Val  
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Ile Trp Asp Tyr Lys Arg Glu Ala Pro Ala His Val Ser Thr Ile Gly  
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Val Cys Thr Met Thr Asp Ile Ala Lys Lys Pro Thr Glu Ser Ala Cys  
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Lys Gly Leu Thr Pro Ser Lys Gly Pro Ala Gln Ala Ser Val Asn Gly  
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Val Thr Leu Ile Gly Glu Ser Val Lys Thr Gln Phe Asn Tyr Phe Lys  
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Lys Val Asp Gly Ile Ile Gln Gln Leu Pro Glu Thr Tyr Phe Thr Gln  
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Ser Arg Asp Leu Glu Asp Phe Lys Pro Arg Ser Gln Met Glu Thr Asp  
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Phe Leu Glu Leu Ala Met Asp Glu Phe Ile Gln Arg Tyr Lys Leu Glu  
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Gly Tyr Ala Phe Glu His Ile Val Tyr Gly Asp Phe Ser His Gly Gln  
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Leu Gly Gly Leu His Leu Met Ile Gly Leu Ala Lys Arg Ser Gln Asp  
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Ser Pro Leu Lys Leu Glu Asp Phe Ile Pro Met Asp Ser Thr Val Lys  
6690 6695 6700

Asn Tyr Phe Ile Thr Asp Ala Gln Thr Gly Ser Ser Lys Cys Val Cys  
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Ser Val Ile Asp Leu Leu Leu Asp Asp Phe Val Glu Ile Ile Lys Ser  
6725 6730 6735

Gln Asp Leu Ser Val Ile Ser Lys Val Val Lys Val Thr Ile Asp Tyr  
6740 6745 6750

SEQLIST-20480.TXT

Ala Glu Ile Ser Phe Met Leu Trp Cys Lys Asp Gly His Val Glu Thr  
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Phe Tyr Pro Lys Leu Gln Ala Ser Arg Ala Trp Gln Pro Gly Val Ala  
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Met Pro Asn Leu Tyr Lys Met Gln Arg Met Leu Leu Glu Lys Cys Asp  
6785 6790 6795 6800

Leu Gln Asn Tyr Gly Glu Asn Ala Val Ile Pro Lys Gly Ile Met Met  
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Asn Val Ala Lys Tyr Thr Gln Leu Cys Gln Tyr Leu Asn Thr Leu Thr  
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Leu Ala Val Pro Tyr Asn Met Arg Val Ile His Phe Gly Ala Gly Ser  
6835 6840 6845

Asp Lys Gly Val Ala Pro Gly Thr Ala Val Leu Arg Gln Trp Leu Pro  
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Thr Gly Thr Leu Leu Val Asp Ser Asp Leu Asn Asp Phe Val Ser Asp  
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Ala Tyr Ser Thr Leu Ile Gly Asp Cys Ala Thr Val His Thr Ala Asn  
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Lys Trp Asp Leu Ile Ile Ser Asp Met Tyr Asp Pro Arg Thr Lys His  
6900 6905 6910

Val Thr Lys Glu Asn Asp Ser Lys Glu Gly Phe Phe Thr Tyr Leu Cys  
6915 6920 6925

Gly Phe Ile Lys Gln Lys Leu Ala Leu Gly Gly Ser Ile Ala Val Lys  
6930 6935 6940

Ile Thr Glu His Ser Trp Asn Ala Asp Leu Tyr Lys Leu Met Gly His  
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Phe Ser Trp Trp Thr Ala Phe Val Thr Asn Val Asn Ala Ser Ser Ser  
6965 6970 6975

Glu Ala Phe Leu Ile Gly Ala Asn Tyr Leu Gly Lys Pro Lys Glu Gln  
6980 6985 6990

Ile Asp Gly Tyr Thr Met His Ala Asn Tyr Ile Phe Trp Arg Asn Thr  
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Asn Pro Ile Gln Leu Ser Ser Tyr Ser Leu Phe Asp Met Ser Lys Phe  
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Pro Leu Lys Leu Arg Gly Thr Ala Val Met Ser Leu Lys Glu Asn Gln  
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Ile Asn Asp Met Ile Tyr Ser Leu Leu Glu Lys Gly Arg Leu Ile Ile  
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SEQLIST-20480.TXT

<212> PRT

<213> SARS coronavirus

<400> 7253

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20      25      30
Asp Ser Val Glu Glu Ala Leu Ser Glu Ala Arg Glu His Leu Lys Asn
35      40      45
Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val Leu Pro Gln Leu
50      55      60
Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala Leu Ser Thr Asn
65      70      75      80
His Gly His Lys Val Val Glu Leu Val Ala Glu Met Asp Gly Ile Gln
85      90      95
Tyr Gly Arg Ser Gly Ile Thr Leu Gly Val Leu Val Pro His Val Gly
100     105     110
Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg Lys Asn Gly Asn
115     120     125
Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu Lys Ser Tyr Asp
130     135     140
Leu Gly Asp Glu Leu Gly Thr Asp Pro Ile Glu Asp Tyr Glu Gln Asn
145     150     155     160
Trp Asn Thr Lys His Gly Ser Gly Ala Leu Arg Glu Leu Thr Arg Glu
165     170     175
Leu Asn Gly Gly Ala Val Thr Arg Tyr Val Asp Asn Asn Phe Cys Gly
180     185     190
Pro Asp Gly Tyr Pro Leu Asp Cys Ile Lys Asp Phe Leu Ala Arg Ala
195     200     205
Gly Lys Ser Met Cys Thr Leu Ser Glu Gln Leu Asp Tyr Ile Glu Ser
210     215     220
Lys Arg Gly Val Tyr Cys Cys Arg Asp His Glu His Glu Ile Ala Trp
225     230     235     240
Phe Thr Glu Arg Ser Asp Lys Ser Tyr Glu His Gln Thr Pro Phe Glu
245     250     255
Ile Lys Ser Ala Lys Lys Phe Asp Thr Phe Lys Gly Glu Cys Pro Lys
260     265     270
Phe Val Phe Pro Leu Asn Ser Lys Val Lys Val Ile Gln Pro Arg Val
275     280     285
Glu Lys Lys Lys Thr Glu Gly Phe Met Gly Arg Ile Arg Ser Val Tyr
290     295     300
Pro Val Ala Ser Pro Gln Glu Cys Asn Asn Met His Leu Ser Thr Leu
305     310     315     320

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SEQLIST-20480.TXT

Met Lys Cys Asn His Cys Asp Glu Val Ser Trp Gln Thr Cys Asp Phe  
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Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met  
355 360 365  
Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val  
370 375 380  
Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly  
385 390 395 400  
Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys  
405 410 415  
Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly  
420 425 430  
Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu  
435 440 445  
Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val  
450 455 460  
Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe  
465 470 475 480  
Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr  
485 490 495  
Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr  
500 505 510  
Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser  
515 520 525  
Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala Ala Gly Val Ile  
530 535 540  
Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pro  
545 550 555 560  
Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln  
565 570 575  
Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser Asp Leu Leu Thr  
580 585 590  
Asn Ser Val Ile Ile Met Ala Tyr Val Thr Gly Gly Leu Val Gln Gln  
595 600 605  
Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr Val Glu Lys Leu  
610 615 620  
Arg Pro Ile Phe Glu Trp Ile Glu Ala Lys Leu Ser Ala Gly Val Glu  
625 630 635 640  
Phe Leu Lys Asp Ala Trp Glu Ile Leu Lys Phe Leu Ile Thr Gly Val  
645 650 655

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Phe Asp Ile Val Lys Gly Gln Ile Gln Val Ala Ser Asp Asn Ile Lys  
 660 665 670  
 Asp Cys Val Lys Cys Phe Ile Asp Val Val Asn Lys Ala Leu Glu Met  
 675 680 685  
 Cys Ile Asp Gln Val Thr Ile Ala Gly Ala Lys Leu Arg Ser Leu Asn  
 690 695 700  
 Leu Gly Glu Val Phe Ile Ala Gln Ser Lys Gly Leu Tyr Arg Gln Cys  
 705 710 715 720  
 Ile Arg Gly Lys Glu Gln Leu Gln Leu Leu Met Pro Leu Lys Ala Pro  
 725 730 735  
 Lys Glu Val Thr Phe Leu Glu Gly Asp Ser His Asp Thr Val Leu Thr  
 740 745 750  
 Ser Glu Glu Val Val Leu Lys Asn Gly Glu Leu Glu Ala Leu Glu Thr  
 755 760 765  
 Pro Val Asp Ser Phe Thr Asn Gly Ala Ile Val Gly Thr Pro Val Cys  
 770 775 780  
 Val Asn Gly Leu Met Leu Leu Glu Ile Lys Asp Lys Glu Gln Tyr Cys  
 785 790 795 800  
 Ala Leu Ser Pro Gly Leu Leu Ala Thr Asn Asn Val Phe Arg Leu Lys  
 805 810 815  
 Gly Gly Ala Pro Ile Lys Gly Val Thr Phe Gly Glu Asp Thr Val Trp  
 820 825 830  
 Glu Val Gln Gly Tyr Lys Asn Val Arg Ile Thr Phe Glu Leu Asp Glu  
 835 840 845  
 Arg Val Asp Lys Val Leu Asn Glu Lys Cys Ser Val Tyr Thr Val Glu  
 850 855 860  
 Ser Gly Thr Glu Val Thr Glu Phe Ala Cys Val Val Ala Glu Ala Val  
 865 870 875 880  
 Val Lys Thr Leu Gln Pro Val Ser Asp Leu Leu Thr Asn Met Gly Ile  
 885 890 895  
 Asp Leu Asp Glu Trp Ser Val Ala Thr Phe Tyr Leu Phe Asp Asp Ala  
 900 905 910  
 Gly Glu Glu Asn Phe Ser Ser Arg Met Tyr Cys Ser Phe Tyr Pro Pro  
 915 920 925  
 Asp Glu Glu Glu Glu Asp Asp Ala Glu Cys Glu Glu Glu Ile Asp  
 930 935 940  
 Glu Thr Cys Glu His Glu Tyr Gly Thr Glu Asp Asp Tyr Gln Gly Leu  
 945 950 955 960  
 Pro Leu Glu Phe Gly Ala Ser Ala Glu Thr Val Arg Val Glu Glu Glu  
 965 970 975  
 Glu Glu Glu Asp Trp Leu Asp Asp Thr Thr Glu Gln Ser Glu Ile Glu  
 980 985 990

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Pro Glu Pro Glu Pro Thr Pro Glu Glu Pro Val Asn Gln Phe Thr Gly  
 995 1000 1005  
 Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Ile Val  
 1010 1015 1020  
 Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala Ala Asn  
 1025 1030 1035 1040  
 Ile His Leu Lys His Gly Gly Gly Val Ala Gly Ala Leu Asn Lys Ala  
 1045 1050 1055  
 Thr Asn Gly Ala Met Gln Lys Glu Ser Asp Asp Tyr Ile Lys Leu Asn  
 1060 1065 1070  
 Gly Pro Leu Thr Val Gly Gly Ser Cys Leu Leu Ser Gly His Asn Leu  
 1075 1080 1085  
 Ala Lys Lys Cys Leu His Val Val Gly Pro Asn Leu Asn Ala Gly Glu  
 1090 1095 1100  
 Asp Ile Gln Leu Leu Lys Ala Ala Tyr Glu Asn Phe Asn Ser Gln Asp  
 1105 1110 1115 1120  
 Ile Leu Leu Ala Pro Leu Leu Ser Ala Gly Ile Phe Gly Ala Lys Pro  
 1125 1130 1135  
 Leu Gln Ser Leu Gln Val Cys Val Gln Thr Val Arg Thr Gln Val Tyr  
 1140 1145 1150  
 Ile Ala Val Asn Asp Lys Ala Leu Tyr Glu Gln Val Val Met Asp Tyr  
 1155 1160 1165  
 Leu Asp Asn Leu Lys Pro Arg Val Glu Ala Pro Lys Gln Glu Glu Pro  
 1170 1175 1180  
 Pro Asn Thr Glu Asp Ser Lys Thr Glu Glu Lys Ser Val Val Gln Lys  
 1185 1190 1195 1200  
 Pro Val Asp Val Lys Pro Lys Ile Lys Ala Cys Ile Asp Glu Val Thr  
 1205 1210 1215  
 Thr Thr Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys Leu Leu Leu Phe  
 1220 1225 1230  
 Ala Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln Asn Met Leu Arg  
 1235 1240 1245  
 Gly Glu Asp Met Ser Phe Leu Glu Lys Asp Ala Pro Tyr Met Val Gly  
 1250 1255 1260  
 Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val Ile Pro Ser Lys  
 1265 1270 1275 1280  
 Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala Leu Lys Lys Val  
 1285 1290 1295  
 Pro Val Asp Glu Tyr Ile Thr Thr Tyr Pro Gly Gln Gly Cys Ala Gly  
 1300 1305 1310  
 Tyr Thr Leu Glu Glu Ala Lys Thr Ala Leu Lys Lys Cys Lys Ser Ala  
 1315 1320 1325

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Phe Tyr Val Leu Pro Ser Glu Ala Pro Asn Ala Lys Glu Glu Ile Leu  
 1330 1335 1340  
 Gly Thr Val Ser Trp Asn Leu Arg Glu Met Leu Ala His Ala Glu Glu  
 1345 1350 1355 1360  
 Thr Arg Lys Leu Met Pro Ile Cys Met Asp Val Arg Ala Ile Met Ala  
 1365 1370 1375  
 Thr Ile Gln Arg Lys Tyr Lys Gly Ile Lys Ile Gln Glu Gly Ile Val  
 1380 1385 1390  
 Asp Tyr Gly Val Arg Phe Phe Phe Tyr Thr Ser Lys Glu Pro Val Ala  
 1395 1400 1405  
 Ser Ile Ile Thr Lys Leu Asn Ser Leu Asn Glu Pro Leu Val Thr Met  
 1410 1415 1420  
 Pro Ile Gly Tyr Val Thr His Gly Phe Asn Leu Glu Glu Ala Ala Arg  
 1425 1430 1435 1440  
 Cys Met Arg Ser Leu Lys Ala Pro Ala Val Val Ser Val Ser Ser Pro  
 1445 1450 1455  
 Asp Ala Val Thr Thr Tyr Asn Gly Tyr Leu Thr Ser Ser Ser Lys Thr  
 1460 1465 1470  
 Ser Glu Glu His Phe Val Glu Thr Val Ser Leu Ala Gly Ser Tyr Arg  
 1475 1480 1485  
 Asp Trp Ser Tyr Ser Gly Gln Arg Thr Glu Leu Gly Val Glu Phe Leu  
 1490 1495 1500  
 Lys Arg Gly Asp Lys Ile Val Tyr His Thr Leu Glu Ser Pro Val Glu  
 1505 1510 1515 1520  
 Phe His Leu Asp Gly Glu Val Leu Ser Leu Asp Lys Leu Lys Ser Leu  
 1525 1530 1535  
 Leu Ser Leu Arg Glu Val Lys Thr Ile Lys Val Phe Thr Thr Val Asp  
 1540 1545 1550  
 Asn Thr Asn Leu His Thr Gln Leu Val Asp Met Ser Met Thr Tyr Gly  
 1555 1560 1565  
 Gln Gln Phe Gly Pro Thr Tyr Leu Asp Gly Ala Asp Val Thr Lys Ile  
 1570 1575 1580  
 Lys Pro His Val Asn His Glu Gly Lys Thr Phe Phe Val Leu Pro Ser  
 1585 1590 1595 1600  
 Asp Asp Thr Leu Arg Ser Glu Ala Phe Glu Tyr Tyr His Thr Leu Asp  
 1605 1610 1615  
 Glu Ser Phe Leu Gly Arg Tyr Met Ser Ala Leu Asn His Thr Lys Lys  
 1620 1625 1630  
 Trp Lys Phe Pro Gln Val Gly Gly Leu Thr Ser Ile Lys Trp Ala Asp  
 1635 1640 1645  
 Asn Asn Cys Tyr Leu Ser Ser Val Leu Leu Ala Leu Gln Gln Leu Glu  
 1650 1655 1660

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Val Lys Phe Asn Ala Pro Ala Leu Gln Glu Ala Tyr Tyr Arg Ala Arg  
1665 1670 1675 1680

Ala Gly Asp Ala Ala Asn Phe Cys Ala Leu Ile Leu Ala Tyr Ser Asn  
1685 1690 1695

Lys Thr Val Gly Glu Leu Gly Asp Val Arg Glu Thr Met Thr His Leu  
1700 1705 1710

Leu Gln His Ala Asn Leu Glu Ser Ala Lys Arg Val Leu Asn Val Val  
1715 1720 1725

Cys Lys His Cys Gly Gln Lys Thr Thr Thr Leu Thr Gly Val Glu Ala  
1730 1735 1740

Val Met Tyr Met Gly Thr Leu Ser Tyr Asp Asn Leu Lys Thr Gly Val  
1745 1750 1755 1760

Ser Ile Pro Cys Val Cys Gly Arg Asp Ala Thr Gln Tyr Leu Val Gln  
1765 1770 1775

Gln Glu Ser Ser Phe Val Met Met Ser Ala Pro Pro Ala Glu Tyr Lys  
1780 1785 1790

Leu Gln Gln Gly Thr Phe Leu Cys Ala Asn Glu Tyr Thr Gly Asn Tyr  
1795 1800 1805

Gln Cys Gly His Tyr Thr His Ile Thr Ala Lys Glu Thr Leu Tyr Arg  
1810 1815 1820

Ile Asp Gly Ala His Leu Thr Lys Met Ser Glu Tyr Lys Gly Pro Val  
1825 1830 1835 1840

Thr Asp Val Phe Tyr Lys Glu Thr Ser Tyr Thr Thr Thr Ile Lys Pro  
1845 1850 1855

Val Ser Tyr Lys Leu Asp Gly Val Thr Tyr Thr Glu Ile Glu Pro Lys  
1860 1865 1870

Leu Asp Gly Tyr Tyr Lys Lys Asp Asn Ala Tyr Tyr Thr Glu Gln Pro  
1875 1880 1885

Ile Asp Leu Val Pro Thr Gln Pro Leu Pro Asn Ala Ser Phe Asp Asn  
1890 1895 1900

Phe Lys Leu Thr Cys Ser Asn Thr Lys Phe Ala Asp Asp Leu Asn Gln  
1905 1910 1915 1920

Met Thr Gly Phe Thr Lys Pro Ala Ser Arg Glu Leu Ser Val Thr Phe  
1925 1930 1935

Phe Pro Asp Leu Asn Gly Asp Val Val Ala Ile Asp Tyr Arg His Tyr  
1940 1945 1950

Ser Ala Ser Phe Lys Lys Gly Ala Lys Leu Leu His Lys Pro Ile Val  
1955 1960 1965

Trp His Ile Asn Gln Ala Thr Thr Lys Thr Thr Phe Lys Pro Asn Thr  
1970 1975 1980

Trp Cys Leu Arg Cys Leu Trp Ser Thr Lys Pro Val Asp Thr Ser Asn  
1985 1990 1995 2000



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Ser Phe Glu Val Leu Ala Val Glu Asp Thr Gln Gly Met Asp Asn Leu  
2005 2010 2015  
Ala Cys Glu Ser Gln Gln Pro Thr Ser Glu Glu Val Val Glu Asn Pro  
2020 2025 2030  
Thr Ile Gln Lys Glu Val Ile Glu Cys Asp Val Lys Thr Thr Glu Val  
2035 2040 2045  
Val Gly Asn Val Ile Leu Lys Pro Ser Asp Glu Gly Val Lys Val Thr  
2050 2055 2060  
Gln Glu Leu Gly His Glu Asp Leu Met Ala Ala Tyr Val Glu Asn Thr  
2065 2070 2075 2080  
Ser Ile Thr Ile Lys Lys Pro Asn Glu Leu Ser Leu Ala Leu Gly Leu  
2085 2090 2095  
Lys Thr Ile Ala Thr His Gly Ile Ala Ala Ile Asn Ser Val Pro Trp  
2100 2105 2110  
Ser Lys Ile Leu Ala Tyr Val Lys Pro Phe Leu Gly Gln Ala Ala Ile  
2115 2120 2125  
Thr Thr Ser Asn Cys Ala Lys Arg Leu Ala Gln Arg Val Phe Asn Asn  
2130 2135 2140  
Tyr Met Pro Tyr Val Phe Thr Leu Leu Phe Gln Leu Cys Thr Phe Thr  
2145 2150 2155 2160  
Lys Ser Thr Asn Ser Arg Ile Arg Ala Ser Leu Pro Thr Thr Ile Ala  
2165 2170 2175  
Lys Asn Ser Val Lys Ser Val Ala Lys Leu Cys Leu Asp Ala Gly Ile  
2180 2185 2190  
Asn Tyr Val Lys Ser Pro Lys Phe Ser Lys Leu Phe Thr Ile Ala Met  
2195 2200 2205  
Trp Leu Leu Leu Leu Ser Ile Cys Leu Gly Ser Leu Ile Cys Val Thr  
2210 2215 2220  
Ala Ala Phe Gly Val Leu Leu Ser Asn Phe Gly Ala Pro Ser Tyr Cys  
2225 2230 2235 2240  
Asn Gly Val Arg Glu Leu Tyr Leu Asn Ser Ser Asn Val Thr Thr Met  
2245 2250 2255  
Asp Phe Cys Glu Gly Ser Phe Pro Cys Ser Ile Cys Leu Ser Gly Leu  
2260 2265 2270  
Asp Ser Leu Asp Ser Tyr Pro Ala Leu Glu Thr Ile Gln Val Thr Ile  
2275 2280 2285  
Ser Ser Tyr Lys Leu Asp Leu Thr Ile Leu Gly Leu Ala Ala Glu Trp  
2290 2295 2300  
Val Leu Ala Tyr Met Leu Phe Thr Lys Phe Phe Tyr Leu Leu Gly Leu  
2305 2310 2315 2320  
Ser Ala Ile Met Gln Val Phe Phe Gly Tyr Phe Ala Ser His Phe Ile  
2325 2330 2335

SEQLIST-20480.TXT

Ser Asn Ser Trp Leu Met Trp Phe Ile Ile Ser Ile Val Gln Met Ala  
2340 2345 2350

Pro Val Ser Ala Met Val Arg Met Tyr Ile Phe Phe Ala Ser Phe Tyr  
2355 2360 2365

Tyr Ile Trp Lys Ser Tyr Val His Ile Met Asp Gly Cys Thr Ser Ser  
2370 2375 2380

Thr Cys Met Met Cys Tyr Lys Arg Asn Arg Ala Thr Arg Val Glu Cys  
2385 2390 2395 2400

Thr Thr Ile Val Asn Gly Met Lys Arg Ser Phe Tyr Val Tyr Ala Asn  
2405 2410 2415

Gly Gly Arg Gly Phe Cys Lys Thr His Asn Trp Asn Cys Leu Asn Cys  
2420 2425 2430

Asp Thr Phe Cys Thr Gly Ser Thr Phe Ile Ser Asp Glu Val Ala Arg  
2435 2440 2445

Asp Leu Ser Leu Gln Phe Lys Arg Pro Ile Asn Pro Thr Asp Gln Ser  
2450 2455 2460

Ser Tyr Ile Val Asp Ser Val Ala Val Lys Asn Gly Ala Leu His Leu  
2465 2470 2475 2480

Tyr Phe Asp Lys Ala Gly Gln Lys Thr Tyr Glu Arg His Pro Leu Ser  
2485 2490 2495

His Phe Val Asn Leu Asp Asn Leu Arg Ala Asn Asn Thr Lys Gly Ser  
2500 2505 2510

Leu Pro Ile Asn Val Ile Val Phe Asp Gly Lys Ser Lys Cys Asp Glu  
2515 2520 2525

Ser Ala Ser Lys Ser Ala Ser Val Tyr Tyr Ser Gln Leu Met Cys Gln  
2530 2535 2540

Pro Ile Leu Leu Leu Asp Gln Ala Leu Val Ser Asp Val Gly Asp Ser  
2545 2550 2555 2560

Thr Glu Val Ser Val Lys Met Phe Asp Ala Tyr Val Asp Thr Phe Ser  
2565 2570 2575

Ala Thr Phe Ser Val Pro Met Glu Lys Leu Lys Ala Leu Val Ala Thr  
2580 2585 2590

Ala His Ser Glu Leu Ala Lys Gly Val Ala Leu Asp Gly Val Leu Ser  
2595 2600 2605

Thr Phe Val Ser Ala Ala Arg Gln Gly Val Val Asp Thr Asp Val Asp  
2610 2615 2620

Thr Lys Asp Val Ile Glu Cys Leu Lys Leu Ser His His Ser Asp Leu  
2625 2630 2635 2640

Glu Val Thr Gly Asp Ser Cys Asn Asn Phe Met Leu Thr Tyr Asn Lys  
2645 2650 2655

Val Glu Asn Met Thr Pro Arg Asp Leu Gly Ala Cys Ile Asp Cys Asn  
2660 2665 2670

SEQLIST-20480.TXT

Ala Arg His Ile Asn Ala Gln Val Ala Lys Ser His Asn Val Ser Leu  
2675 2680 2685

Ile Trp Asn Val Lys Asp Tyr Met Ser Leu Ser Glu Gln Leu Arg Lys  
2690 2695 2700

Gln Ile Arg Ser Ala Ala Lys Lys Asn Asn Ile Pro Phe Arg Leu Thr  
2705 2710 2715 2720

Cys Ala Thr Thr Arg Gln Val Val Asn Val Ile Thr Thr Lys Ile Ser  
2725 2730 2735

Leu Lys Gly Gly Lys Ile Val Ser Thr Cys Phe Lys Leu Met Leu Lys  
2740 2745 2750

Ala Thr Leu Leu Cys Val Leu Ala Ala Leu Val Cys Tyr Ile Val Met  
2755 2760 2765

Pro Val His Thr Leu Ser Ile His Asp Gly Tyr Thr Asn Glu Ile Ile  
2770 2775 2780

Gly Tyr Lys Ala Ile Gln Asp Gly Val Thr Arg Asp Ile Ile Ser Thr  
2785 2790 2795 2800

Asp Asp Cys Phe Ala Asn Lys His Ala Gly Phe Asp Ala Trp Phe Ser  
2805 2810 2815

Gln Arg Gly Gly Ser Tyr Lys Asn Asp Lys Ser Cys Pro Val Val Ala  
2820 2825 2830

Ala Ile Ile Thr Arg Glu Ile Gly Phe Ile Val Pro Gly Leu Pro Gly  
2835 2840 2845

Thr Val Leu Arg Ala Ile Asn Gly Asp Phe Leu His Phe Leu Pro Arg  
2850 2855 2860

Val Phe Ser Ala Val Gly Asn Ile Cys Tyr Thr Pro Ser Lys Leu Ile  
2865 2870 2875 2880

Glu Tyr Ser Asp Phe Ala Thr Ser Ala Cys Val Leu Ala Ala Glu Cys  
2885 2890 2895

Thr Ile Phe Lys Asp Ala Met Gly Lys Pro Val Pro Tyr Cys Tyr Asp  
2900 2905 2910

Thr Asn Leu Leu Glu Gly Ser Ile Ser Tyr Ser Glu Leu Arg Pro Asp  
2915 2920 2925

Thr Arg Tyr Val Leu Met Asp Gly Ser Ile Ile Gln Phe Pro Asn Thr  
2930 2935 2940

Tyr Leu Glu Gly Ser Val Arg Val Val Thr Thr Phe Asp Ala Glu Tyr  
2945 2950 2955 2960

Cys Arg His Gly Thr Cys Glu Arg Ser Glu Val Gly Ile Cys Leu Ser  
2965 2970 2975

Thr Ser Gly Arg Trp Val Leu Asn Asn Glu His Tyr Arg Ala Leu Ser  
2980 2985 2990

Gly Val Phe Cys Gly Val Asp Ala Met Asn Leu Ile Ala Asn Ile Phe  
2995 3000 3005

SEQLIST-20480.TXT

Thr Pro Leu Val Gln Pro Val Gly Ala Leu Asp Val Ser Ala Ser Val  
 3010 3015 3020  
 Val Ala Gly Gly Ile Ile Ala Ile Leu Val Thr Cys Ala Ala Tyr Tyr  
 3025 3030 3035 3040  
 Phe Met Lys Phe Arg Arg Val Phe Gly Glu Tyr Asn His Val Val Ala  
 3045 3050 3055  
 Ala Asn Ala Leu Leu Phe Leu Met Ser Phe Thr Ile Leu Cys Leu Val  
 3060 3065 3070  
 Pro Ala Tyr Ser Phe Leu Pro Gly Val Tyr Ser Val Phe Tyr Leu Tyr  
 3075 3080 3085  
 Leu Thr Phe Tyr Phe Thr Asn Asp Val Ser Phe Leu Ala His Leu Gln  
 3090 3095 3100  
 Trp Phe Ala Met Phe Ser Pro Ile Val Pro Phe Trp Ile Thr Ala Ile  
 3105 3110 3115 3120  
 Tyr Val Phe Cys Ile Ser Leu Lys His Cys His Trp Phe Phe Asn Asn  
 3125 3130 3135  
 Tyr Leu Arg Lys Arg Val Met Phe Asn Gly Val Thr Phe Ser Thr Phe  
 3140 3145 3150  
 Glu Glu Ala Ala Leu Cys Thr Phe Leu Leu Asn Lys Glu Met Tyr Leu  
 3155 3160 3165  
 Lys Leu Arg Ser Glu Thr Leu Leu Pro Leu Thr Gln Tyr Asn Arg Tyr  
 3170 3175 3180  
 Leu Ala Leu Tyr Asn Lys Tyr Lys Tyr Phe Ser Gly Ala Leu Asp Thr  
 3185 3190 3195 3200  
 Thr Ser Tyr Arg Glu Ala Ala Cys Cys His Leu Ala Lys Ala Leu Asn  
 3205 3210 3215  
 Asp Phe Ser Asn Ser Gly Ala Asp Val Leu Tyr Gln Pro Pro Gln Thr  
 3220 3225 3230  
 Ser Ile Thr Ser Ala Val Leu Gln Ser Gly Phe Arg Lys Met Ala Phe  
 3235 3240 3245  
 Pro Ser Gly Lys Val Glu Gly Cys Met Val Gln Val Thr Cys Gly Thr  
 3250 3255 3260  
 Thr Thr Leu Asn Gly Leu Trp Leu Asp Asp Thr Val Tyr Cys Pro Arg  
 3265 3270 3275 3280  
 His Val Ile Cys Thr Ala Glu Asp Met Leu Asn Pro Asn Tyr Glu Asp  
 3285 3290 3295  
 Leu Leu Ile Arg Lys Ser Asn His Ser Phe Leu Val Gln Ala Gly Asn  
 3300 3305 3310  
 Val Gln Leu Arg Val Ile Gly His Ser Met Gln Asn Cys Leu Leu Arg  
 3315 3320 3325  
 Leu Lys Val Asp Thr Ser Asn Pro Lys Thr Pro Lys Tyr Lys Phe Val  
 3330 3335 3340

SEQLIST-20480.TXT

Arg Ile Gln Pro Gly Gln Thr Phe Ser Val Leu Ala Cys Tyr Asn Gly  
3345 3350 3355 3360

Ser Pro Ser Gly Val Tyr Gln Cys Ala Met Arg Pro Asn His Thr Ile  
3365 3370 3375

Lys Gly Ser Phe Leu Asn Gly Ser Cys Gly Ser Val Gly Phe Asn Ile  
3380 3385 3390

Asp Tyr Asp Cys Val Ser Phe Cys Tyr Met His His Met Glu Leu Pro  
3395 3400 3405

Thr Gly Val His Ala Gly Thr Asp Leu Glu Gly Lys Phe Tyr Gly Pro  
3410 3415 3420

Phe Val Asp Arg Gln Thr Ala Gln Ala Ala Gly Thr Asp Thr Thr Ile  
3425 3430 3435 3440

Thr Leu Asn Val Leu Ala Trp Leu Tyr Ala Ala Val Ile Asn Gly Asp  
3445 3450 3455

Arg Trp Phe Leu Asn Arg Phe Thr Thr Thr Leu Asn Asp Phe Asn Leu  
3460 3465 3470

Val Ala Met Lys Tyr Asn Tyr Glu Pro Leu Thr Gln Asp His Val Asp  
3475 3480 3485

Ile Leu Gly Pro Leu Ser Ala Gln Thr Gly Ile Ala Val Leu Asp Met  
3490 3495 3500

Cys Ala Ala Leu Lys Glu Leu Leu Gln Asn Gly Met Asn Gly Arg Thr  
3505 3510 3515 3520

Ile Leu Gly Ser Thr Ile Leu Glu Asp Glu Phe Thr Pro Phe Asp Val  
3525 3530 3535

Val Arg Gln Cys Ser Gly Val Thr Phe Gln Gly Lys Phe Lys Lys Ile  
3540 3545 3550

Val Lys Gly Thr His His Trp Met Leu Leu Thr Phe Leu Thr Ser Leu  
3555 3560 3565

Leu Ile Leu Val Gln Ser Thr Gln Trp Ser Leu Phe Phe Phe Val Tyr  
3570 3575 3580

Glu Asn Ala Phe Leu Pro Phe Thr Leu Gly Ile Met Ala Ile Ala Ala  
3585 3590 3595 3600

Cys Ala Met Leu Leu Val Lys His Lys His Ala Phe Leu Cys Leu Phe  
3605 3610 3615

Leu Leu Pro Ser Leu Ala Thr Val Ala Tyr Phe Asn Met Val Tyr Met  
3620 3625 3630

Pro Ala Ser Trp Val Met Arg Ile Met Thr Trp Leu Glu Leu Ala Asp  
3635 3640 3645

Thr Ser Leu Ser Gly Tyr Arg Leu Lys Asp Cys Val Met Tyr Ala Ser  
3650 3655 3660

Ala Leu Val Leu Leu Ile Leu Met Thr Ala Arg Thr Val Tyr Asp Asp  
3665 3670 3675 3680

SEQLIST-20480.TXT

Ala Ala Arg Arg Val Trp Thr Leu Met Asn Val Ile Thr Leu Val Tyr  
3685 3690 3695

Lys Val Tyr Tyr Gly Asn Ala Leu Asp Gln Ala Ile Ser Met Trp Ala  
3700 3705 3710

Leu Val Ile Ser Val Thr Ser Asn Tyr Ser Gly Val Val Thr Thr Ile  
3715 3720 3725

Met Phe Leu Ala Arg Ala Ile Val Phe Val Cys Val Glu Tyr Tyr Pro  
3730 3735 3740

Leu Leu Phe Ile Thr Gly Asn Thr Leu Gln Cys Ile Met Leu Val Tyr  
3745 3750 3755 3760

Cys Phe Leu Gly Tyr Cys Cys Cys Cys Tyr Phe Gly Leu Phe Cys Leu  
3765 3770 3775

Leu Asn Arg Tyr Phe Arg Leu Thr Leu Gly Val Tyr Asp Tyr Leu Val  
3780 3785 3790

Ser Thr Gln Glu Phe Arg Tyr Met Asn Ser Gln Gly Leu Leu Pro Pro  
3795 3800 3805

Lys Ser Ser Ile Asp Ala Phe Lys Leu Asn Ile Lys Leu Leu Gly Ile  
3810 3815 3820

Gly Gly Lys Pro Cys Ile Lys Val Ala Thr Val Gln Ser Lys Met Ser  
3825 3830 3835 3840

Asp Val Lys Cys Thr Ser Val Val Leu Leu Ser Val Leu Gln Gln Leu  
3845 3850 3855

Arg Val Glu Ser Ser Ser Lys Leu Trp Ala Gln Cys Val Gln Leu His  
3860 3865 3870

Asn Asp Ile Leu Leu Ala Lys Asp Thr Thr Glu Ala Phe Glu Lys Met  
3875 3880 3885

Val Ser Leu Leu Ser Val Leu Leu Ser Met Gln Gly Ala Val Asp Ile  
3890 3895 3900

Asn Arg Leu Cys Glu Glu Met Leu Asp Asn Arg Ala Thr Leu Gln Ala  
3905 3910 3915 3920

Ile Ala Ser Glu Phe Ser Ser Leu Pro Ser Tyr Ala Ala Tyr Ala Thr  
3925 3930 3935

Ala Gln Glu Ala Tyr Glu Gln Ala Val Ala Asn Gly Asp Ser Glu Val  
3940 3945 3950

Val Leu Lys Lys Leu Lys Lys Ser Leu Asn Val Ala Lys Ser Glu Phe  
3955 3960 3965

Asp Arg Asp Ala Ala Met Gln Arg Lys Leu Glu Lys Met Ala Asp Gln  
3970 3975 3980

Ala Met Thr Gln Met Tyr Lys Gln Ala Arg Ser Glu Asp Lys Arg Ala  
3985 3990 3995 4000

Lys Val Thr Ser Ala Met Gln Thr Met Leu Phe Thr Met Leu Arg Lys  
4005 4010 4015

SEQLIST-20480.TXT

Leu Asp Asn Asp Ala Leu Asn Asn Ile Ile Asn Asn Ala Arg Asp Gly  
 4020 4025 4030  
 Cys Val Pro Leu Asn Ile Ile Pro Leu Thr Thr Ala Ala Lys Leu Met  
 4035 4040 4045  
 Val Val Val Pro Asp Tyr Gly Thr Tyr Lys Asn Thr Cys Asp Gly Asn  
 4050 4055 4060  
 Thr Phe Thr Tyr Ala Ser Ala Leu Trp Glu Ile Gln Gln Val Val Asp  
 4065 4070 4075 4080  
 Ala Asp Ser Lys Ile Val Gln Leu Ser Glu Ile Asn Met Asp Asn Ser  
 4085 4090 4095  
 Pro Asn Leu Ala Trp Pro Leu Ile Val Thr Ala Leu Arg Ala Asn Ser  
 4100 4105 4110  
 Ala Val Lys Leu Gln Asn Asn Glu Leu Ser Pro Val Ala Leu Arg Gln  
 4115 4120 4125  
 Met Ser Cys Ala Ala Gly Thr Thr Gln Thr Ala Cys Thr Asp Asp Asn  
 4130 4135 4140  
 Ala Leu Ala Tyr Tyr Asn Asn Ser Lys Gly Gly Arg Phe Val Leu Ala  
 4145 4150 4155 4160  
 Leu Leu Ser Asp His Gln Asp Leu Lys Trp Ala Arg Phe Pro Lys Ser  
 4165 4170 4175  
 Asp Gly Thr Gly Thr Ile Tyr Thr Glu Leu Glu Pro Pro Cys Arg Phe  
 4180 4185 4190  
 Val Thr Asp Thr Pro Lys Gly Pro Lys Val Lys Tyr Leu Tyr Phe Ile  
 4195 4200 4205  
 Lys Gly Leu Asn Asn Leu Asn Arg Gly Met Val Leu Gly Ser Leu Ala  
 4210 4215 4220  
 Ala Thr Val Arg Leu Gln Ala Gly Asn Ala Thr Glu Val Pro Ala Asn  
 4225 4230 4235 4240  
 Ser Thr Val Leu Ser Phe Cys Ala Phe Ala Val Asp Pro Ala Lys Ala  
 4245 4250 4255  
 Tyr Lys Asp Tyr Leu Ala Ser Gly Gly Gln Pro Ile Thr Asn Cys Val  
 4260 4265 4270  
 Lys Met Leu Cys Thr His Thr Gly Thr Gly Gln Ala Ile Thr Val Thr  
 4275 4280 4285  
 Pro Glu Ala Asn Met Asp Gln Glu Ser Phe Gly Gly Ala Ser Cys Cys  
 4290 4295 4300  
 Leu Tyr Cys Arg Cys His Ile Asp His Pro Asn Pro Lys Gly Phe Cys  
 4305 4310 4315 4320  
 Asp Leu Lys Gly Lys Tyr Val Gln Ile Pro Thr Thr Cys Ala Asn Asp  
 4325 4330 4335  
 Pro Val Gly Phe Thr Leu Arg Asn Thr Val Cys Thr Val Cys Gly Met  
 4340 4345 4350

SEQLIST-20480.TXT

Trp Lys Gly Tyr Gly Cys Ser Cys Asp Gln Leu Arg Glu Pro Leu Met  
 4355 4360 4365  
 Gln Ser Ala Asp Ala Ser Thr Phe Leu Asn Arg Val Cys Gly Val Ser  
 4370 4375 4380  
 Ala Ala Arg Leu Thr Pro Cys Gly Thr Gly Thr Ser Thr Asp Val Val  
 4385 4390 4395 4400  
 Tyr Arg Ala Phe Asp Ile Tyr Asn Glu Lys Val Ala Gly Phe Ala Lys  
 4405 4410 4415  
 Phe Leu Lys Thr Asn Cys Cys Arg Phe Gln Glu Lys Asp Glu Glu Gly  
 4420 4425 4430  
 Asn Leu Leu Asp Ser Tyr Phe Val Val Lys Arg His Thr Met Ser Asn  
 4435 4440 4445  
 Tyr Gln His Glu Glu Thr Ile Tyr Asn Leu Val Lys Asp Cys Pro Ala  
 4450 4455 4460  
 Val Ala Val His Asp Phe Phe Lys Phe Arg Val Asp Gly Asp Met Val  
 4465 4470 4475 4480  
 Pro His Ile Ser Arg Gln Arg Leu Thr Lys Tyr Thr Met Ala Asp Leu  
 4485 4490 4495  
 Val Tyr Ala Leu Arg His Phe Asp Glu Gly Asn Cys Asp Thr Leu Lys  
 4500 4505 4510  
 Glu Ile Leu Val Thr Tyr Asn Cys Cys Asp Asp Asp Tyr Phe Asn Lys  
 4515 4520 4525  
 Lys Asp Trp Tyr Asp Phe Val Glu Asn Pro Asp Ile Leu Arg Val Tyr  
 4530 4535 4540  
 Ala Asn Leu Gly Glu Arg Val Arg Gln Ser Leu Leu Lys Thr Val Gln  
 4545 4550 4555 4560  
 Phe Cys Asp Ala Met Arg Asp Ala Gly Ile Val Gly Val Leu Thr Leu  
 4565 4570 4575  
 Asp Asn Gln Asp Leu Asn Gly Asn Trp Tyr Asp Phe Gly Asp Phe Val  
 4580 4585 4590  
 Gln Val Ala Pro Gly Cys Gly Val Pro Ile Val Asp Ser Tyr Tyr Ser  
 4595 4600 4605  
 Leu Leu Met Pro Ile Leu Thr Leu Thr Arg Ala Leu Ala Ala Glu Ser  
 4610 4615 4620  
 His Met Asp Ala Asp Leu Ala Lys Pro Leu Ile Lys Trp Asp Leu Leu  
 4625 4630 4635 4640  
 Lys Tyr Asp Phe Thr Glu Glu Arg Leu Cys Leu Phe Asp Arg Tyr Phe  
 4645 4650 4655  
 Lys Tyr Trp Asp Gln Thr Tyr His Pro Asn Cys Ile Asn Cys Leu Asp  
 4660 4665 4670  
 Asp Arg Cys Ile Leu His Cys Ala Asn Phe Asn Val Leu Phe Ser Thr  
 4675 4680 4685



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Val Phe Pro Pro Thr Ser Phe Gly Pro Leu Val Arg Lys Ile Phe Val  
4690 4695 4700

Asp Gly Val Pro Phe Val Val Ser Thr Gly Tyr His Phe Arg Glu Leu  
4705 4710 4715 4720

Gly Val Val His Asn Gln Asp Val Asn Leu His Ser Ser Arg Leu Ser  
4725 4730 4735

Phe Lys Glu Leu Leu Val Tyr Ala Ala Asp Pro Ala Met His Ala Ala  
4740 4745 4750

Ser Gly Asn Leu Leu Leu Asp Lys Arg Thr Thr Cys Phe Ser Val Ala  
4755 4760 4765

Ala Leu Thr Asn Asn Val Ala Phe Gln Thr Val Lys Pro Gly Asn Phe  
4770 4775 4780

Asn Lys Asp Phe Tyr Asp Phe Ala Val Ser Lys Gly Phe Phe Lys Glu  
4785 4790 4795 4800

Gly Ser Ser Val Glu Leu Lys His Phe Phe Phe Ala Gln Asp Gly Asn  
4805 4810 4815

Ala Ala Ile Ser Asp Tyr Asp Tyr Tyr Arg Tyr Asn Leu Pro Thr Met  
4820 4825 4830

Cys Asp Ile Arg Gln Leu Leu Phe Val Val Glu Val Val Asp Lys Tyr  
4835 4840 4845

Phe Asp Cys Tyr Asp Gly Gly Cys Ile Asn Ala Asn Gln Val Ile Val  
4850 4855 4860

Asn Asn Leu Asp Lys Ser Ala Gly Phe Pro Phe Asn Lys Trp Gly Lys  
4865 4870 4875 4880

Ala Arg Leu Tyr Tyr Asp Ser Met Ser Tyr Glu Asp Gln Asp Ala Leu  
4885 4890 4895

Phe Ala Tyr Thr Lys Arg Asn Val Ile Pro Thr Ile Thr Gln Met Asn  
4900 4905 4910

Leu Lys Tyr Ala Ile Ser Ala Lys Asn Arg Ala Arg Thr Val Ala Gly  
4915 4920 4925

Val Ser Ile Cys Ser Thr Met Thr Asn Arg Gln Phe His Gln Lys Leu  
4930 4935 4940

Leu Lys Ser Ile Ala Ala Thr Arg Gly Ala Thr Val Val Ile Gly Thr  
4945 4950 4955 4960

Ser Lys Phe Tyr Gly Gly Trp His Asn Met Leu Lys Thr Val Tyr Ser  
4965 4970 4975

Asp Val Glu Thr Pro His Leu Met Gly Trp Asp Tyr Pro Lys Cys Asp  
4980 4985 4990

Arg Ala Met Pro Asn Met Leu Arg Ile Met Ala Ser Leu Val Leu Ala  
4995 5000 5005

Arg Lys His Asn Thr Cys Cys Asn Leu Ser His Arg Phe Tyr Arg Leu  
5010 5015 5020

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Ala Asn Glu Cys Ala Gln Val Leu Ser Glu Met Val Met Cys Gly Gly  
5025 5030 5035 5040

Ser Leu Tyr Val Lys Pro Gly Gly Thr Ser Ser Gly Asp Ala Thr Thr  
5045 5050 5055

Ala Tyr Ala Asn Ser Val Phe Asn Ile Cys Gln Ala Val Thr Ala Asn  
5060 5065 5070

Val Asn Ala Leu Leu Ser Thr Asp Gly Asn Lys Ile Ala Asp Lys Tyr  
5075 5080 5085

Val Arg Asn Leu Gln His Arg Leu Tyr Glu Cys Leu Tyr Arg Asn Arg  
5090 5095 5100

Asp Val Asp His Glu Phe Val Asp Glu Phe Tyr Ala Tyr Leu Arg Lys  
5105 5110 5115 5120

His Phe Ser Met Met Ile Leu Ser Asp Asp Ala Val Val Cys Tyr Asn  
5125 5130 5135

Ser Asn Tyr Ala Ala Gln Gly Leu Val Ala Ser Ile Lys Asn Phe Lys  
5140 5145 5150

Ala Val Leu Tyr Tyr Gln Asn Asn Val Phe Met Ser Glu Ala Lys Cys  
5155 5160 5165

Trp Thr Glu Thr Asp Leu Thr Lys Gly Pro His Glu Phe Cys Ser Gln  
5170 5175 5180

His Thr Met Leu Val Lys Gln Gly Asp Asp Tyr Val Tyr Leu Pro Tyr  
5185 5190 5195 5200

Pro Asp Pro Ser Arg Ile Leu Gly Ala Gly Cys Phe Val Asp Asp Ile  
5205 5210 5215

Val Lys Thr Asp Gly Thr Leu Met Ile Glu Arg Phe Val Ser Leu Ala  
5220 5225 5230

Ile Asp Ala Tyr Pro Leu Thr Lys His Pro Asn Gln Glu Tyr Ala Asp  
5235 5240 5245

Val Phe His Leu Tyr Leu Gln Tyr Ile Arg Lys Leu His Asp Glu Leu  
5250 5255 5260

Thr Gly His Met Leu Asp Met Tyr Ser Val Met Leu Thr Asn Asp Asn  
5265 5270 5275 5280

Thr Ser Arg Tyr Trp Glu Pro Glu Phe Tyr Glu Ala Met Tyr Thr Pro  
5285 5290 5295

His Thr Val Leu Gln Ala Val Gly Ala Cys Val Leu Cys Asn Ser Gln  
5300 5305 5310

Thr Ser Leu Arg Cys Gly Ala Cys Ile Arg Arg Pro Phe Leu Cys Cys  
5315 5320 5325

Lys Cys Cys Tyr Asp His Val Ile Ser Thr Ser His Lys Leu Val Leu  
5330 5335 5340

Ser Val Asn Pro Tyr Val Cys Asn Ala Pro Gly Cys Asp Val Thr Asp  
5345 5350 5355 5360

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Val Thr Gln Leu Tyr Leu Gly Gly Met Ser Tyr Tyr Cys Lys Ser His  
5365 5370 5375

Lys Pro Pro Ile Ser Phe Pro Leu Cys Ala Asn Gly Gln Val Phe Gly  
5380 5385 5390

Leu Tyr Lys Asn Thr Cys Val Gly Ser Asp Asn Val Thr Asp Phe Asn  
5395 5400 5405

Ala Ile Ala Thr Cys Asp Trp Thr Asn Ala Gly Asp Tyr Ile Leu Ala  
5410 5415 5420

Asn Thr Cys Thr Glu Arg Leu Lys Leu Phe Ala Ala Glu Thr Leu Lys  
5425 5430 5440

Ala Thr Glu Glu Thr Phe Lys Leu Ser Tyr Gly Ile Ala Thr Val Arg  
5445 5450 5455

Glu Val Leu Ser Asp Arg Glu Leu His Leu Ser Trp Glu Val Gly Lys  
5460 5465 5470

Pro Arg Pro Pro Leu Asn Arg Asn Tyr Val Phe Thr Gly Tyr Arg Val  
5475 5480 5485

Thr Lys Asn Ser Lys Val Gln Ile Gly Glu Tyr Thr Phe Glu Lys Gly  
5490 5495 5500

Asp Tyr Gly Asp Ala Val Val Tyr Arg Gly Thr Thr Thr Tyr Lys Leu  
5505 5510 5515 5520

Asn Val Gly Asp Tyr Phe Val Leu Thr Ser His Thr Val Met Pro Leu  
5525 5530 5535

Ser Ala Pro Thr Leu Val Pro Gln Glu His Tyr Val Arg Ile Thr Gly  
5540 5545 5550

Leu Tyr Pro Thr Leu Asn Ile Ser Asp Glu Phe Ser Ser Asn Val Ala  
5555 5560 5565

Asn Tyr Gln Lys Val Gly Met Gln Lys Tyr Ser Thr Leu Gln Gly Pro  
5570 5575 5580

Pro Gly Thr Gly Lys Ser His Phe Ala Ile Gly Leu Ala Leu Tyr Tyr  
5585 5590 5595 5600

Pro Ser Ala Arg Ile Val Tyr Thr Ala Cys Ser His Ala Ala Val Asp  
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Ala Leu Cys Glu Lys Ala Leu Lys Tyr Leu Pro Ile Asp Lys Cys Ser  
5620 5625 5630

Arg Ile Ile Pro Ala Arg Ala Arg Val Glu Cys Phe Asp Lys Phe Lys  
5635 5640 5645

Val Asn Ser Thr Leu Glu Gln Tyr Val Phe Cys Thr Val Asn Ala Leu  
5650 5655 5660

Pro Glu Thr Thr Ala Asp Ile Val Val Phe Asp Glu Ile Ser Met Ala  
5665 5670 5675 5680

Thr Asn Tyr Asp Leu Ser Val Val Asn Ala Arg Leu Arg Ala Lys His  
5685 5690 5695

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Tyr Val Tyr Ile Gly Asp Pro Ala Gln Leu Pro Ala Pro Arg Thr Leu  
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 Leu Thr Lys Gly Thr Leu Glu Pro Glu Tyr Phe Asn Ser Val Cys Arg  
 5715 5720 5725  
 Leu Met Lys Thr Ile Gly Pro Asp Met Phe Leu Gly Thr Cys Arg Arg  
 5730 5735 5740  
 Cys Pro Ala Glu Ile Val Asp Thr Val Ser Ala Leu Val Tyr Asp Asn  
 5745 5750 5755 5760  
 Lys Leu Lys Ala His Lys Asp Lys Ser Ala Gln Cys Phe Lys Met Phe  
 5765 5770 5775  
 Tyr Lys Gly Val Ile Thr His Asp Val Ser Ser Ala Ile Asn Arg Pro  
 5780 5785 5790  
 Gln Ile Gly Val Val Arg Glu Phe Leu Thr Arg Asn Pro Ala Trp Arg  
 5795 5800 5805  
 Lys Ala Val Phe Ile Ser Pro Tyr Asn Ser Gln Asn Ala Val Ala Ser  
 5810 5815 5820  
 Lys Ile Leu Gly Leu Pro Thr Gln Thr Val Asp Ser Ser Gln Gly Ser  
 5825 5830 5835 5840  
 Glu Tyr Asp Tyr Val Ile Phe Thr Gln Thr Thr Glu Thr Ala His Ser  
 5845 5850 5855  
 Cys Asn Val Asn Arg Phe Asn Val Ala Ile Thr Arg Ala Lys Ile Gly  
 5860 5865 5870  
 Ile Leu Cys Ile Met Ser Asp Arg Asp Leu Tyr Asp Lys Leu Gln Phe  
 5875 5880 5885  
 Thr Ser Leu Glu Ile Pro Arg Arg Asn Val Ala Thr Leu Gln Ala Glu  
 5890 5895 5900  
 Asn Val Thr Gly Leu Phe Lys Asp Cys Ser Lys Ile Ile Thr Gly Leu  
 5905 5910 5915 5920  
 His Pro Thr Gln Ala Pro Thr His Leu Ser Val Asp Ile Lys Phe Lys  
 5925 5930 5935  
 Thr Glu Gly Leu Cys Val Asp Ile Pro Gly Ile Pro Lys Asp Met Thr  
 5940 5945 5950  
 Tyr Arg Arg Leu Ile Ser Met Met Gly Phe Lys Met Asn Tyr Gln Val  
 5955 5960 5965  
 Asn Gly Tyr Pro Asn Met Phe Ile Thr Arg Glu Glu Ala Ile Arg His  
 5970 5975 5980  
 Val Arg Ala Trp Ile Gly Phe Asp Val Glu Gly Cys His Ala Thr Arg  
 5985 5990 5995 6000  
 Asp Ala Val Gly Thr Asn Leu Pro Leu Gln Leu Gly Phe Ser Thr Gly  
 6005 6010 6015  
 Val Asn Leu Val Ala Val Pro Thr Gly Tyr Val Asp Thr Glu Asn Asn  
 6020 6025 6030

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Thr Glu Phe Thr Arg Val Asn Ala Lys Pro Pro Pro Gly Asp Gln Phe  
 6035 6040 6045  
 Lys His Leu Ile Pro Leu Met Tyr Lys Gly Leu Pro Trp Asn Val Val  
 6050 6055 6060  
 Arg Ile Lys Ile Val Gln Met Leu Ser Asp Thr Leu Lys Gly Leu Ser  
 6065 6070 6075 6080  
 Asp Arg Val Val Phe Val Leu Trp Ala His Gly Phe Glu Leu Thr Ser  
 6085 6090 6095  
 Met Lys Tyr Phe Val Lys Ile Gly Pro Glu Arg Thr Cys Cys Leu Cys  
 6100 6105 6110  
 Asp Lys Arg Ala Thr Cys Phe Ser Thr Ser Ser Asp Thr Tyr Ala Cys  
 6115 6120 6125  
 Trp Asn His Ser Val Gly Phe Asp Tyr Val Tyr Asn Pro Phe Met Ile  
 6130 6135 6140  
 Asp Val Gln Gln Trp Gly Phe Thr Gly Asn Leu Gln Ser Asn His Asp  
 6145 6150 6155 6160  
 Gln His Cys Gln Val His Gly Asn Ala His Val Ala Ser Cys Asp Ala  
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 Ile Met Thr Arg Cys Leu Ala Val His Glu Cys Phe Val Lys Arg Val  
 6180 6185 6190  
 Asp Trp Ser Val Glu Tyr Pro Ile Ile Gly Asp Glu Leu Arg Val Asn  
 6195 6200 6205  
 Ser Ala Cys Arg Lys Val Gln His Met Val Val Lys Ser Ala Leu Leu  
 6210 6215 6220  
 Ala Asp Lys Phe Pro Val Leu His Asp Ile Gly Asn Pro Lys Ala Ile  
 6225 6230 6235 6240  
 Lys Cys Val Pro Gln Ala Glu Val Glu Trp Lys Phe Tyr Asp Ala Gln  
 6245 6250 6255  
 Pro Cys Ser Asp Lys Ala Tyr Lys Ile Glu Glu Leu Phe Tyr Ser Tyr  
 6260 6265 6270  
 Ala Thr His His Asp Lys Phe Thr Asp Gly Val Cys Leu Phe Trp Asn  
 6275 6280 6285  
 Cys Asn Val Asp Arg Tyr Pro Ala Asn Ala Ile Val Cys Arg Phe Asp  
 6290 6295 6300  
 Thr Arg Val Leu Ser Asn Leu Asn Leu Pro Gly Cys Asp Gly Gly Ser  
 6305 6310 6315 6320  
 Leu Tyr Val Asn Lys His Ala Phe His Thr Pro Ala Phe Asp Lys Ser  
 6325 6330 6335  
 Ala Phe Thr Asn Leu Lys Gln Leu Pro Phe Phe Tyr Tyr Ser Asp Ser  
 6340 6345 6350  
 Pro Cys Glu Ser His Gly Lys Gln Val Val Ser Asp Ile Asp Tyr Val  
 6355 6360 6365

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Pro Leu Lys Ser Ala Thr Cys Ile Thr Arg Cys Asn Leu Gly Gly Ala  
6370 6375 6380

Val Cys Arg His His Ala Asn Glu Tyr Arg Gln Tyr Leu Asp Ala Tyr  
6385 6390 6395 6400

Asn Met Met Ile Ser Ala Gly Phe Ser Leu Trp Ile Tyr Lys Gln Phe  
6405 6410 6415

Asp Thr Tyr Asn Leu Trp Asn Thr Phe Thr Arg Leu Gln Ser Leu Glu  
6420 6425 6430

Asn Val Ala Tyr Asn Val Val Asn Lys Gly His Phe Asp Gly His Ala  
6435 6440 6445

Gly Glu Ala Pro Val Ser Ile Ile Asn Asn Ala Val Tyr Thr Lys Val  
6450 6455 6460

Asp Gly Ile Asp Val Glu Ile Phe Glu Asn Lys Thr Thr Leu Pro Val  
6465 6470 6475 6480

Asn Val Ala Phe Glu Leu Trp Ala Lys Arg Asn Ile Lys Pro Val Pro  
6485 6490 6495

Glu Ile Lys Ile Leu Asn Asn Leu Gly Val Asp Ile Ala Ala Asn Thr  
6500 6505 6510

Val Ile Trp Asp Tyr Lys Arg Glu Ala Pro Ala His Val Ser Thr Ile  
6515 6520 6525

Gly Val Cys Thr Met Thr Asp Ile Ala Lys Lys Pro Thr Glu Ser Ala  
6530 6535 6540

Cys Ser Ser Leu Thr Val Leu Phe Asp Gly Arg Val Glu Gly Gln Val  
6545 6550 6555 6560

Asp Leu Phe Arg Asn Ala Arg Asn Gly Val Leu Ile Thr Glu Gly Ser  
6565 6570 6575

Val Lys Gly Leu Thr Pro Ser Lys Gly Pro Ala Gln Ala Ser Val Asn  
6580 6585 6590

Gly Val Thr Leu Ile Gly Glu Ser Val Lys Thr Gln Phe Asn Tyr Phe  
6595 6600 6605

Lys Lys Val Asp Gly Ile Ile Gln Gln Leu Pro Glu Thr Tyr Phe Thr  
6610 6615 6620

Gln Ser Arg Asp Leu Glu Asp Phe Lys Pro Arg Ser Gln Met Glu Thr  
6625 6630 6635 6640

Asp Phe Leu Glu Leu Ala Met Asp Glu Phe Ile Gln Arg Tyr Lys Leu  
6645 6650 6655

Glu Gly Tyr Ala Phe Glu His Ile Val Tyr Gly Asp Phe Ser His Gly  
6660 6665 6670

Gln Leu Gly Gly Leu His Leu Met Ile Gly Leu Ala Lys Arg Ser Gln  
6675 6680 6685

Asp Ser Pro Leu Lys Leu Glu Asp Phe Ile Pro Met Asp Ser Thr Val  
6690 6695 6700

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Lys Asn Tyr Phe Ile Thr Asp Ala Gln Thr Gly Ser Ser Lys Cys Val  
 6705 6710 6715 6720  
 Cys Ser Val Ile Asp Leu Leu Leu Asp Asp Phe Val Glu Ile Ile Lys  
 6725 6730 6735  
 Ser Gln Asp Leu Ser Val Ile Ser Lys Val Val Lys Val Thr Ile Asp  
 6740 6745 6750  
 Tyr Ala Glu Ile Ser Phe Met Leu Trp Cys Lys Asp Gly His Val Glu  
 6755 6760 6765  
 Thr Phe Tyr Pro Lys Leu Gln Ala Ser Arg Ala Trp Gln Pro Gly Val  
 6770 6775 6780  
 Ala Met Pro Asn Leu Tyr Lys Met Gln Arg Met Leu Leu Glu Lys Cys  
 6785 6790 6795 6800  
 Asp Leu Gln Asn Tyr Gly Glu Asn Ala Val Ile Pro Lys Gly Ile Met  
 6805 6810 6815  
 Met Asn Val Ala Lys Tyr Thr Gln Leu Cys Gln Tyr Leu Asn Thr Leu  
 6820 6825 6830  
 Thr Leu Ala Val Pro Tyr Asn Met Arg Val Ile His Phe Gly Ala Gly  
 6835 6840 6845  
 Ser Asp Lys Gly Val Ala Pro Gly Thr Ala Val Leu Arg Gln Trp Leu  
 6850 6855 6860  
 Pro Thr Gly Thr Leu Leu Val Asp Ser Asp Leu Asn Asp Phe Val Ser  
 6865 6870 6875 6880  
 Asp Ala Tyr Ser Thr Leu Ile Gly Asp Cys Ala Thr Val His Thr Ala  
 6885 6890 6895  
 Asn Lys Trp Asp Leu Ile Ile Ser Asp Met Tyr Asp Pro Arg Thr Lys  
 6900 6905 6910  
 His Val Thr Lys Glu Asn Asp Ser Lys Glu Gly Phe Phe Thr Tyr Leu  
 6915 6920 6925  
 Cys Gly Phe Ile Lys Gln Lys Leu Ala Leu Gly Gly Ser Ile Ala Val  
 6930 6935 6940  
 Lys Ile Thr Glu His Ser Trp Asn Ala Asp Leu Tyr Lys Leu Met Gly  
 6945 6950 6955 6960  
 His Phe Ser Trp Trp Thr Ala Phe Val Thr Asn Val Asn Ala Ser Ser  
 6965 6970 6975  
 Ser Glu Ala Phe Leu Ile Gly Ala Asn Tyr Leu Gly Lys Pro Lys Glu  
 6980 6985 6990  
 Gln Ile Asp Gly Tyr Thr Met His Ala Asn Tyr Ile Phe Trp Arg Asn  
 6995 7000 7005  
 Thr Asn Pro Ile Gln Leu Ser Ser Tyr Ser Leu Phe Asp Met Ser Lys  
 7010 7015 7020  
 Phe Pro Leu Lys Leu Arg Gly Thr Ala Val Met Ser Leu Lys Glu Asn  
 7025 7030 7035 7040

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Gln Ile Asn Asp Met Ile Tyr Ser Leu Leu Glu Lys Gly Arg Leu Ile  
7045 7050 7055  
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<212> PRT  
<213> SARS coronavirus

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<210> 7255  
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<212> PRT  
<213> SARS coronavirus

<400> 7255  
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<210> 7256  
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<210> 7257  
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<210> 7258  
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<210> 7259  
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<400> 7259  
Asn Val Thr Asp  
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<210> 7260  
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<210> 7261  
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 Asn Val Thr Gly  
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<210> 7263  
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 Asn His Ser Val  
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<210> 7264  
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 Asn Lys Thr Thr  
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<210> 7265  
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 <213> SARS coronavirus

<400> 7265  
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<210> 7266  
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SEQLIST-20480.TXT

<210> 7267  
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<210> 7268  
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<400> 7268  
 Asn Gly Thr Ile  
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<210> 7269  
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 <212> PRT  
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<400> 7269  
 Asn Val Thr Ile  
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<210> 7270  
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<400> 7270  
 Asn Asn Thr Ala  
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<210> 7271  
 <211> 4  
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<400> 7271  
 Asn Val Thr Gln  
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<210> 7272  
 <211> 48  
 <212> PRT  
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<400> 7272  
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Met Leu His Leu Ser Phe Gly Leu Ser Val Thr Leu Asn Gln Cys Gln  
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Arg Leu Arg Tyr Ser Ile Ile Trp Val Leu Ile Ser Leu Leu Ile Leu  
 35 40 45

<210> 7273

SEQLIST-20480.TXT

<211> 147  
<212> DNA  
<213> SARS coronavirus

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agctttgggc taagcgtaac attaaaccag tgccagagat taagatactc aataatttgg 120  
gtgttgatat cgctgctaact actgtaa 147

<210> 7274  
<211> 42  
<212> PRT  
<213> SARS coronavirus

<400> 7274  
Met Leu Gln Gly Phe Ile Leu Leu Ile Ile Arg Leu Ala Thr Leu Ser  
1 5 10 15  
Tyr Leu Leu Arg Met Val Phe Ile Leu Leu Pro Gln Arg Asn Gln Met  
20 25 30  
Leu Ser Val Val Gly Phe Leu Val Leu Pro  
35 40

<210> 7275  
<211> 129  
<212> DNA  
<213> SARS coronavirus

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ctaccatga 129

<210> 7276  
<211> 48  
<212> PRT  
<213> SARS coronavirus

<400> 7276  
Met His Leu Ile Ala Leu Ser Ser Thr Tyr Leu Met Pro Phe Arg Leu  
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Met Phe Gln Lys Ser Gln Val Ile Leu Asn Thr Tyr Glu Ser Leu Cys  
20 25 30  
Leu Lys Ile Lys Met Gly Phe Ser Met Phe Ile Arg Ala Ile Asn Leu  
35 40 45

<210> 7277  
<211> 147  
<212> DNA  
<213> SARS coronavirus

<400> 7277  
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agtcaggtaa ttttaaacac ttacgagagt ttgtgtttta aaataaagat gggtttctct 120  
atgtttataa gggctatcaa cctatag 147

<210> 7278  
<211> 48  
<212> PRT

SEQLIST-20480.TXT

<213> SARS coronavirus

<400> 7278

Met Met Lys Met Val Gln Ser Gln Met Leu Leu Ile Val Leu Lys Ile  
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His Leu Leu Asn Ser Asn Ala Leu Leu Arg Ala Leu Arg Leu Thr Lys  
20 25 30  
Glu Phe Thr Arg Pro Leu Ile Ser Gly Leu Phe Pro Gln Glu Met Leu  
35 40 45

<210> 7279

<211> 147

<212> DNA

<213> SARS coronavirus

<400> 7279

atgatgaaaa tggatcaatc acagatgctg ttgattgttc tcaaaatcca cttgctgaac 60  
tcaaattgctc tggtaagagc tttagattg acaaaggaat ttaccagacc tctaatttca 120  
gggttggtcc ctcaggagat gttgtga 147

<210> 7280

<211> 44

<212> PRT

<213> SARS coronavirus

<400> 7280

Met Leu Leu Asn Ser Leu Leu Ser Met His Gly Arg Glu Lys Lys Phe  
1 5 10 15  
Leu Ile Val Leu Leu Ile Thr Leu Cys Ser Thr Thr Gln His Phe Phe  
20 25 30  
Gln Pro Leu Ser Ala Met Ala Phe Leu Pro Leu Ser  
35 40

<210> 7281

<211> 135

<212> DNA

<213> SARS coronavirus

<400> 7281

atgctactaa attcccttct gtctatgcat gggagagaaa aaaaatttct aattgtgttg 60  
ctgattactc tgtgctctac aactcaacat tttttcaac cttaagtgc tatggcgttt 120  
ctgccactaa gttga 135

<210> 7282

<211> 64

<212> PRT

<213> SARS coronavirus

<400> 7282

Met Ile Ser Trp Val Val Ser Leu Leu Gly Ile Leu Gly Thr Leu Met  
1 5 10 15  
Leu Leu Gln Leu Val Ile Ile Ile Ile Asn Ile Gly Ile Leu Asp Met  
20 25 30  
Ala Ser Leu Gly Pro Leu Arg Glu Thr Tyr Leu Met Cys Leu Ser Pro  
35 40 45

SEQLIST-20480.TXT

Leu Met Ala Asn Leu Ala Pro His Leu Leu Leu Ile Val Ile Gly His  
50 55 60

<210> 7283  
<211> 195  
<212> DNA  
<213> SARS coronavirus

<400> 7283  
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gtaattataa ttataaatat aggtatccta gacatggcaa gcttagggccc tttgagagag 120  
acatatctaa tgtgcctttc tcccctgatg gcaaaccttg caccacacct gctcttaatt 180  
gttattggcc attaa 195

<210> 7284  
<211> 48  
<212> PRT  
<213> SARS coronavirus

<400> 7284  
Met Leu His Leu Lys Leu Leu Phe Tyr Ile Lys Met Leu Thr Ala Leu  
1 5 10 15  
Met Phe Leu Gln Gln Phe Met Gln Ile Asn Ser His Gln Leu Gly Ala  
20 25 30  
Tyr Ile Leu Leu Glu Thr Met Tyr Ser Arg Leu Lys Gln Ala Val Leu  
35 40 45

<210> 7285  
<211> 147  
<212> DNA  
<213> SARS coronavirus

<400> 7285  
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caattcatgc agatcaactc acaccagctt ggcgcataata ttctactgga aacaatgtat 120  
tccagactca agcaggctgt cttatag 147

<210> 7286  
<211> 52  
<212> PRT  
<213> SARS coronavirus

<400> 7286  
Met Ala Leu Glu Leu Pro Lys Met Phe Ser Met Arg Thr Lys Asn Lys  
1 5 10 15  
Ser Pro Thr Asn Leu Thr Arg Arg Leu Val Lys Phe Lys Asn His Leu  
20 25 30  
Gln Gln His Gln Leu His Trp Ala Ser Cys Lys Thr Leu Leu Thr Arg  
35 40 45  
Met Leu Lys His  
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<210> 7287  
<211> 159  
<212> DNA  
<213> SARS coronavirus

SEQLIST-20480.TXT

<400> 7287  
 atggcattgg agttacccaa aatgttctct atgagaacca aaaacaaatc gccaaccaat 60  
 ttaacaaggc gattagtcaa attcaagaat cacttacaac aacatcaact gcattgggca 120  
 agctgcaaga cgttgtaac cagaatgctc aagcattaa 159

<210> 7288  
 <211> 56  
 <212> PRT  
 <213> SARS coronavirus

<400> 7288  
 Met Val Leu Ser Ser Tyr Met Ser Arg Met Cys His Pro Arg Arg Gly  
 1 5 10 15  
 Thr Ser Pro Gln Arg Gln Gln Phe Val Met Lys Ala Lys His Thr Ser  
 20 25 30  
 Leu Val Lys Val Phe Leu Cys Leu Met Ala Leu Leu Gly Leu Leu His  
 35 40 45  
 Arg Gly Thr Ser Phe Leu His Lys  
 50 55

<210> 7289  
 <211> 171  
 <212> DNA  
 <213> SARS coronavirus

<400> 7289  
 atgggtgtgtg cttcctacat gtcacgtatg tgccatccca ggagaggaac ttcaccacag 60  
 cgccagcaat ttgtcatgaa ggcaaagcat acttccctcg tgaagggtgtt tttgtgttta 120  
 atggcacttc ttggtttatt acacagagga acttcttttc tccacaaata a 171

<210> 7290  
 <211> 66  
 <212> PRT  
 <213> SARS coronavirus

<400> 7290  
 Met Ser Leu Leu Ala Ser Leu Thr Thr Gln Phe Met Ile Leu Cys Asn  
 1 5 10 15  
 Leu Ser Leu Thr His Ser Lys Lys Ser Trp Thr Ser Thr Ser Lys Ile  
 20 25 30  
 Ile His His Gln Met Leu Ile Leu Ala Thr Phe Gln Ala Leu Thr Leu  
 35 40 45  
 Leu Ser Ser Thr Phe Lys Lys Lys Leu Thr Ala Ser Met Arg Ser Leu  
 50 55 60  
 Lys Ile  
 65

<210> 7291  
 <211> 201  
 <212> DNA  
 <213> SARS coronavirus

<400> 7291  
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 cattcaaaga agagctggac aagtacttca aaaatcatatc atcaccagat gttgattttg 120

| SEQLIST-20480.TXT   |     |  |
|---|-----|--|
| gcgacatttc aggcattaac gcttctgtcg tcaacattca aaaagaaatt gaccgcctca | 180 |  |
| atgaggtcgc taaaaattta a   | 201 |  |
| <210> 7292  |     |  |
| <211> 10  |     |  |
| <212> DNA   |     |  |
| <213> SARS coronavirus  |     |  |
| <400> 7292  |     |  |
| ctaaacgaac  | 10  |  |
| <210> 7293  |     |  |
| <211> 6   |     |  |
| <212> DNA   |     |  |
| <213> SARS coronavirus  |     |  |
| <400> 7293  |     |  |
| acgaac  | 6   |  |
| <210> 7294  |     |  |
| <211> 72  |     |  |
| <212> DNA   |     |  |
| <213> SARS coronavirus  |     |  |
| <400> 7294  |     |  |
| ttattaggtt ttacctacc caggaaaagc caaccaacct cgatctcttg tagatctgtt  | 60  |  |
| ctctaaacga ac   | 72  |  |
| <210> 7295  |     |  |
| <211> 60  |     |  |
| <212> DNA   |     |  |
| <213> SARS coronavirus  |     |  |
| <400> 7295  |     |  |
| tacctacca ggaaaagcca accaacctcg atctcttgta gatctgttct ctaaacgaac  | 60  |  |
| <210> 7296  |     |  |
| <211> 50  |     |  |
| <212> DNA   |     |  |
| <213> SARS coronavirus  |     |  |
| <400> 7296  |     |  |
| ggaaaagcca accaacctcg atctcttgta gatctgttct ctaaacgaac            | 50  |  |
| <210> 7297  |     |  |
| <211> 40  |     |  |
| <212> DNA   |     |  |
| <213> SARS coronavirus  |     |  |
| <400> 7297  |     |  |
| accaacctcg atctcttgta gatctgttct ctaaacgaac                       | 40  |  |
| <210> 7298  |     |  |
| <211> 30  |     |  |
| <212> DNA   |     |  |
| <213> SARS coronavirus  |     |  |
| <400> 7298  |     |  |
| atctcttgta gatctgttct ctaaacgaac                                  | 30  |  |
| <210> 7299  |     |  |
| <211> 20  |     |  |
| <212> DNA   |     |  |

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<213> SARS coronavirus

<400> 7299
gatctgttct ctaaacgaac 20

<210> 7300
<211> 15
<212> DNA
<213> SARS coronavirus

<400> 7300
gttctctaaa cgaac 15

<210> 7301
<211> 13
<212> DNA
<213> SARS coronavirus

<400> 7301
tctctaaacg aac 13

<210> 7302
<211> 680
<212> PRT
<213> Fusion polypeptide (SARS coronavirus & Neisseria meningitidis)

<400> 7302
Met Lys His Phe Pro Ser Lys Val Leu Thr Thr Ala Ile Leu Ala Thr
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Phe Cys Ser Gly Ala Leu Ala Ala Thr Asn Asp Asp Asp Ser Asp Leu
20 25 30
Asp Arg Cys Thr Thr Phe Asp Asp Val Gln Ala Pro Asn Tyr Thr Gln
35 40 45
His Thr Ser Ser Met Arg Gly Val Tyr Tyr Pro Asp Glu Ile Phe Arg
50 55 60
Ser Asp Thr Leu Tyr Leu Thr Gln Asp Leu Phe Leu Pro Phe Tyr Ser
65 70 75 80
Asn Val Thr Gly Phe His Thr Ile Asn His Thr Phe Gly Asn Pro Val
85 90 95
Ile Pro Phe Lys Asp Gly Ile Tyr Phe Ala Ala Thr Glu Lys Ser Asn
100 105 110
Val Val Arg Gly Trp Val Phe Gly Ser Thr Met Asn Asn Lys Ser Gln
115 120 125
Ser Val Ile Ile Ile Asn Asn Ser Thr Asn Val Val Ile Arg Ala Cys
130 135 140
Asn Phe Glu Leu Cys Asp Asn Pro Phe Phe Ala Val Ser Lys Pro Met
145 150 155 160
Gly Thr Gln Thr His Thr Met Ile Phe Asp Asn Ala Phe Asn Cys Thr
165 170 175
Phe Glu Tyr Ile Ser Asp Ala Phe Ser Leu Asp Val Ser Glu Lys Ser
180 185 190

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SEQLIST-20480.TXT

Gly Asn Phe Lys His Leu Arg Glu Phe Val Phe Lys Asn Lys Asp Gly  
195 200 205  
Phe Leu Tyr Val Tyr Lys Gly Tyr Gln Pro Ile Asp Val Val Arg Asp  
210 215 220  
Leu Pro Ser Gly Phe Asn Thr Leu Lys Pro Ile Phe Lys Leu Pro Leu  
225 230 235 240  
Gly Ile Asn Ile Thr Asn Phe Arg Ala Ile Leu Thr Ala Phe Ser Pro  
245 250 255  
Ala Gln Asp Ile Trp Gly Thr Ser Ala Ala Ala Tyr Phe Val Gly Tyr  
260 265 270  
Leu Lys Pro Thr Thr Phe Met Leu Lys Tyr Asp Glu Asn Gly Thr Ile  
275 280 285  
Thr Asp Ala Val Asp Cys Ser Gln Asn Pro Leu Ala Glu Leu Lys Cys  
290 295 300  
Ser Val Lys Ser Phe Glu Ile Asp Lys Gly Ile Tyr Gln Thr Ser Asn  
305 310 315 320  
Phe Arg Val Val Pro Ser Gly Asp Val Val Arg Phe Pro Asn Ile Thr  
325 330 335  
Asn Leu Cys Pro Phe Gly Glu Val Phe Asn Ala Thr Lys Phe Pro Ser  
340 345 350  
Val Tyr Ala Trp Glu Arg Lys Lys Ile Ser Asn Cys Val Ala Asp Tyr  
355 360 365  
Ser Val Leu Tyr Asn Ser Thr Phe Phe Ser Thr Phe Lys Cys Tyr Gly  
370 375 380  
Val Ser Ala Thr Lys Leu Asn Asp Leu Cys Phe Ser Asn Val Tyr Ala  
385 390 395 400  
Asp Ser Phe Val Val Lys Gly Asp Asp Val Arg Gln Ile Ala Pro Gly  
405 410 415  
Gln Thr Gly Val Ile Ala Asp Tyr Asn Tyr Lys Leu Pro Asp Asp Phe  
420 425 430  
Met Gly Cys Val Leu Ala Trp Asn Thr Arg Asn Ile Asp Ala Thr Ser  
435 440 445  
Thr Gly Asn Tyr Asn Tyr Lys Tyr Arg Tyr Leu Arg His Gly Lys Leu  
450 455 460  
Arg Pro Phe Glu Arg Asp Ile Ser Asn Val Pro Phe Ser Pro Asp Gly  
465 470 475 480  
Lys Pro Cys Thr Pro Pro Ala Leu Asn Cys Tyr Trp Pro Leu Asn Asp  
485 490 495  
Tyr Gly Phe Tyr Thr Thr Thr Gly Ile Gly Tyr Gln Pro Tyr Arg Val  
500 505 510  
Val Val Leu Ser Phe Glu Leu Leu Asn Ala Pro Ala Thr Val Cys Gly  
515 520 525

SEQLIST-20480.TXT

Pro Lys Leu Ser Thr Asp Leu Ile Lys Asn Gln Cys Val Asn Phe Asn  
530 535 540

Phe Asn Gly Leu Thr Gly Thr Gly Val Leu Thr Pro Ser Ser Lys Arg  
545 550 555

Phe Gln Pro Phe Gln Gln Phe Gly Arg Asp Val Ser Asp Phe Thr Asp  
565 570 575

Ser Val Arg Asp Pro Lys Thr Ser Glu Ile Leu Asp Ile Ser Pro Cys  
580 585 590

Ser Phe Gly Gly Val Ser Val Ile Thr Pro Gly Thr Asn Ala Ser Ser  
595 600 605

Glu Val Ala Val Leu Tyr Gln Asp Val Asn Cys Thr Asp Val Ser Thr  
610 615 620

Ala Ile His Ala Asp Gln Leu Thr Pro Ala Trp Arg Ile Tyr Ser Thr  
625 630 635 640

Gly Asn Asn Val Phe Gln Thr Gln Ala Gly Cys Leu Ile Gly Ala Glu  
645 650 655

His Val Asp Thr Ser Tyr Glu Cys Asp Ile Pro Ile Gly Ala Gly Ile  
660 665 670

Cys Ala Ser Tyr His Thr Gly Ser  
675 680

<210> 7303  
<211> 998  
<212> PRT  
<213> Fusion polypeptide (SARS coronavirus & Neisseria meningitidis)

<400> 7303  
Met Lys His Phe Pro Ser Lys Val Leu Thr Thr Ala Ile Leu Ala Thr  
1 5 10 15

Phe Cys Ser Gly Ala Leu Ala Ala Thr Asn Asp Asp Asp Ser Asp Leu  
20 25 30

Asp Arg Cys Thr Thr Phe Asp Asp Val Gln Ala Pro Asn Tyr Thr Gln  
35 40 45

His Thr Ser Ser Met Arg Gly Val Tyr Tyr Pro Asp Glu Ile Phe Arg  
50 55 60

Ser Asp Thr Leu Tyr Leu Thr Gln Asp Leu Phe Leu Pro Phe Tyr Ser  
65 70 75 80

Asn Val Thr Gly Phe His Thr Ile Asn His Thr Phe Gly Asn Pro Val  
85 90 95

Ile Pro Phe Lys Asp Gly Ile Tyr Phe Ala Ala Thr Glu Lys Ser Asn  
100 105 110

Val Val Arg Gly Trp Val Phe Gly Ser Thr Met Asn Asn Lys Ser Gln  
115 120 125

Ser Val Ile Ile Ile Asn Asn Ser Thr Asn Val Val Ile Arg Ala Cys  
130 135 140

SEQLIST-20480.TXT

|            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Asn<br>145 | Phe        | Glu        | Leu        | Cys        | Asp<br>150 | Asn        | Pro        | Phe        | Phe        | Ala<br>155 | Val        | Ser        | Lys        | Pro        | Met<br>160 |
| Gly        | Thr        | Gln        | Thr        | His<br>165 | Thr        | Met        | Ile        | Phe        | Asp<br>170 | Asn        | Ala        | Phe        | Asn        | Cys<br>175 | Thr        |
| Phe        | Glu        | Tyr        | Ile<br>180 | Ser        | Asp        | Ala        | Phe        | Ser<br>185 | Leu        | Asp        | Val        | Ser        | Glu<br>190 | Lys        | Ser        |
| Gly        | Asn        | Phe<br>195 | Lys        | His        | Leu        | Arg        | Glu<br>200 | Phe        | Val        | Phe        | Lys        | Asn<br>205 | Lys        | Asp        | Gly        |
| Phe        | Leu<br>210 | Tyr        | Val        | Tyr        | Lys        | Gly<br>215 | Tyr        | Gln        | Pro        | Ile        | Asp<br>220 | Val        | Val        | Arg        | Asp        |
| Leu<br>225 | Pro        | Ser        | Gly        | Phe        | Asn<br>230 | Thr        | Leu        | Lys        | Pro        | Ile<br>235 | Phe        | Lys        | Leu        | Pro        | Leu<br>240 |
| Gly        | Ile        | Asn        | Ile        | Thr<br>245 | Asn        | Phe        | Arg        | Ala        | Ile<br>250 | Leu        | Thr        | Ala        | Phe        | Ser<br>255 | Pro        |
| Ala        | Gln        | Asp        | Ile<br>260 | Trp        | Gly        | Thr        | Ser        | Ala<br>265 | Ala        | Ala        | Tyr        | Phe        | Val<br>270 | Gly        | Tyr        |
| Leu        | Lys        | Pro<br>275 | Thr        | Thr        | Phe        | Met        | Leu<br>280 | Lys        | Tyr        | Asp        | Glu        | Asn<br>285 | Gly        | Thr        | Ile        |
| Thr        | Asp<br>290 | Ala        | Val        | Asp        | Cys        | Ser<br>295 | Gln        | Asn        | Pro        | Leu        | Ala<br>300 | Glu        | Leu        | Lys        | Cys        |
| Ser<br>305 | Val        | Lys        | Ser        | Phe        | Glu<br>310 | Ile        | Asp        | Lys        | Gly        | Ile<br>315 | Tyr        | Gln        | Thr        | Ser        | Asn<br>320 |
| Phe        | Arg        | Val        | Val        | Pro<br>325 | Ser        | Gly        | Asp        | Val        | Val<br>330 | Arg        | Phe        | Pro        | Asn        | Ile<br>335 | Thr        |
| Asn        | Leu        | Cys        | Pro<br>340 | Phe        | Gly        | Glu        | Val        | Phe<br>345 | Asn        | Ala        | Thr        | Lys        | Phe<br>350 | Pro        | Ser        |
| Val        | Tyr        | Ala<br>355 | Trp        | Glu        | Arg        | Lys        | Lys<br>360 | Ile        | Ser        | Asn        | Cys        | Val<br>365 | Ala        | Asp        | Tyr        |
| Ser        | Val<br>370 | Leu        | Tyr        | Asn        | Ser        | Thr<br>375 | Phe        | Phe        | Ser        | Thr        | Phe<br>380 | Lys        | Cys        | Tyr        | Gly        |
| Val<br>385 | Ser        | Ala        | Thr        | Lys        | Leu<br>390 | Asn        | Asp        | Leu        | Cys        | Phe<br>395 | Ser        | Asn        | Val        | Tyr        | Ala<br>400 |
| Asp        | Ser        | Phe        | Val        | Val<br>405 | Lys        | Gly        | Asp        | Asp        | Val<br>410 | Arg        | Gln        | Ile        | Ala        | Pro<br>415 | Gly        |
| Gln        | Thr        | Gly        | Val<br>420 | Ile        | Ala        | Asp        | Tyr        | Asn<br>425 | Tyr        | Lys        | Leu        | Pro        | Asp<br>430 | Asp        | Phe        |
| Met        | Gly        | Cys<br>435 | Val        | Leu        | Ala        | Trp        | Asn<br>440 | Thr        | Arg        | Asn        | Ile        | Asp<br>445 | Ala        | Thr        | Ser        |
| Thr        | Gly<br>450 | Asn        | Tyr        | Asn        | Tyr        | Lys<br>455 | Tyr        | Arg        | Tyr        | Leu        | Arg<br>460 | His        | Gly        | Lys        | Leu        |
| Arg<br>465 | Pro        | Phe        | Glu        | Arg        | Asp<br>470 | Ile        | Ser        | Asn        | Val        | Pro<br>475 | Phe        | Ser        | Pro        | Asp        | Gly<br>480 |

SEQLIST-20480.TXT

Lys Pro Cys Thr Pro 485 Pro Ala Leu Asn Cys 490 Tyr Trp Pro Leu Asn 495 Asp  
 Tyr Gly Phe Tyr 500 Thr Thr Thr Gly Ile 505 Gly Tyr Gln Pro Tyr 510 Arg Val  
 Val Val Leu 515 Ser Phe Glu Leu Leu 520 Asn Ala Pro Ala Thr 525 Val Cys Gly  
 Pro Lys 530 Leu Ser Thr Asp Leu 535 Ile Lys Asn Gln Cys 540 Val Asn Phe Asn  
 Phe 545 Asn Gly Leu Thr Gly 550 Thr Gly Val Leu Thr 555 Pro Ser Ser Lys Arg 560  
 Phe Gln Pro Phe 565 Gln Gln Phe Gly Arg Asp 570 Val Ser Asp Phe Thr 575 Asp  
 Ser Val Arg Asp 580 Pro Lys Thr Ser Glu 585 Ile Leu Asp Ile Ser 590 Pro Cys  
 Ser Phe Gly 595 Gly Val Ser Val Ile Thr 600 Pro Gly Thr Asn 605 Ala Ser Ser  
 Glu Val 610 Ala Val Leu Tyr Gln 615 Asp Val Asn Cys Thr 620 Asp Val Ser Thr  
 Ala 625 Ile His Ala Asp Gln 630 Leu Thr Pro Ala Trp 635 Arg Ile Tyr Ser Thr 640  
 Gly Asn Asn Val Phe 645 Gln Thr Gln Ala Gly 650 Cys Leu Ile Gly Ala 655 Glu  
 His Val Asp Thr 660 Ser Tyr Glu Cys Asp 665 Ile Pro Ile Gly Ala 670 Gly Ile  
 Cys Ala Ser 675 Tyr His Thr Gly Ser 680 Lys Val Val Thr Asn 685 Leu Thr Lys  
 Thr Val 690 Asn Glu Asn Lys Gln 695 Asn Val Asp Ala Lys 700 Val Lys Ala Ala  
 Glu 705 Ser Glu Ile Glu Lys 710 Leu Thr Thr Lys Leu 715 Ala Asp Thr Asp Ala 720  
 Ala Leu Ala Asp Thr 725 Asp Ala Ala Leu Asp 730 Ala Thr Thr Asn Ala 735 Leu  
 Asn Lys Leu Gly 740 Glu Asn Ile Thr Thr 745 Phe Ala Glu Glu Thr 750 Lys Thr  
 Asn Ile Val 755 Lys Ile Asp Glu Lys 760 Leu Glu Ala Val Ala 765 Asp Thr Val  
 Asp Lys 770 His Ala Glu Ala Phe 775 Asn Asp Ile Ala Asp 780 Ser Leu Asp Glu  
 Thr 785 Asn Thr Lys Ala Asp 790 Glu Ala Val Lys Thr 795 Ala Asn Glu Ala Lys 800  
 Gln Thr Ala Glu Glu 805 Thr Lys Gln Asn Val 810 Asp Ala Lys Val Lys 815 Ala

SEQLIST-20480.TXT

Ala Glu Thr Ala Ala Gly Lys Ala Glu Ala Ala Ala Gly Thr Ala Asn  
820 825 830

Thr Ala Ala Asp Lys Ala Glu Ala Val Ala Ala Lys Val Thr Asp Ile  
835 840 845

Lys Ala Asp Ile Ala Thr Asn Lys Asp Asn Ile Ala Lys Lys Ala Asn  
850 855 860

Ser Ala Asp Val Tyr Thr Arg Glu Glu Ser Asp Ser Lys Phe Val Arg  
865 870 875 880

Ile Asp Gly Leu Asn Ala Thr Thr Glu Lys Leu Asp Thr Arg Leu Ala  
885 890 895

Ser Ala Glu Lys Ser Ile Ala Asp His Asp Thr Arg Leu Asn Gly Leu  
900 905 910

Asp Lys Thr Val Ser Asp Leu Arg Lys Glu Thr Arg Gln Gly Leu Ala  
915 920 925

Glu Gln Ala Ala Leu Ser Gly Leu Phe Gln Pro Tyr Asn Val Gly Arg  
930 935 940

Phe Asn Val Thr Ala Ala Val Gly Gly Tyr Lys Ser Glu Ser Ala Val  
945 950 955 960

Ala Ile Gly Thr Gly Phe Arg Phe Thr Glu Asn Phe Ala Ala Lys Ala  
965 970 975

Gly Val Ala Val Gly Thr Ser Ser Gly Ser Ser Ala Ala Tyr His Val  
980 985 990

Gly Val Asn Tyr Glu Trp  
995

<210> 7304  
<211> 943  
<212> PRT  
<213> Fusion polypeptide (SARS coronavirus & Neisseria meningitidis)

<400> 7304  
Met Lys His Phe Pro Ser Lys Val Leu Thr Thr Ala Ile Leu Ala Thr  
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Phe Cys Ser Gly Ala Leu Ala Ala Thr Asn Asp Asp Asp Ser Asp Leu  
20 25 30

Asp Arg Cys Thr Thr Phe Asp Asp Val Gln Ala Pro Asn Tyr Thr Gln  
35 40 45

His Thr Ser Ser Met Arg Gly Val Tyr Tyr Pro Asp Glu Ile Phe Arg  
50 55 60

Ser Asp Thr Leu Tyr Leu Thr Gln Asp Leu Phe Leu Pro Phe Tyr Ser  
65 70 75 80

Asn Val Thr Gly Phe His Thr Ile Asn His Thr Phe Gly Asn Pro Val  
85 90 95

Ile Pro Phe Lys Asp Gly Ile Tyr Phe Ala Ala Thr Glu Lys Ser Asn  
100 105 110

SEQLIST-20480.TXT

Val Val Arg Gly Trp Val Phe Gly Ser Thr Met Asn Asn Lys Ser Gln  
 115 120 125  
 Ser Val Ile Ile Ile Asn Asn Ser Thr Asn Val Val Ile Arg Ala Cys  
 130 135 140  
 Asn Phe Glu Leu Cys Asp Asn Pro Phe Phe Ala Val Ser Lys Pro Met  
 145 150 155 160  
 Gly Thr Gln Thr His Thr Met Ile Phe Asp Asn Ala Phe Asn Cys Thr  
 165 170 175  
 Phe Glu Tyr Ile Ser Asp Ala Phe Ser Leu Asp Val Ser Glu Lys Ser  
 180 185 190  
 Gly Asn Phe Lys His Leu Arg Glu Phe Val Phe Lys Asn Lys Asp Gly  
 195 200 205  
 Phe Leu Tyr Val Tyr Lys Gly Tyr Gln Pro Ile Asp Val Val Arg Asp  
 210 215 220  
 Leu Pro Ser Gly Phe Asn Thr Leu Lys Pro Ile Phe Lys Leu Pro Leu  
 225 230 235 240  
 Gly Ile Asn Ile Thr Asn Phe Arg Ala Ile Leu Thr Ala Phe Ser Pro  
 245 250 255  
 Ala Gln Asp Ile Trp Gly Thr Ser Ala Ala Ala Tyr Phe Val Gly Tyr  
 260 265 270  
 Leu Lys Pro Thr Thr Phe Met Leu Lys Tyr Asp Glu Asn Gly Thr Ile  
 275 280 285  
 Thr Asp Ala Val Asp Cys Ser Gln Asn Pro Leu Ala Glu Leu Lys Cys  
 290 295 300  
 Ser Val Lys Ser Phe Glu Ile Asp Lys Gly Ile Tyr Gln Thr Ser Asn  
 305 310 315 320  
 Phe Arg Val Val Pro Ser Gly Asp Val Val Arg Phe Pro Asn Ile Thr  
 325 330 335  
 Asn Leu Cys Pro Phe Gly Glu Val Phe Asn Ala Thr Lys Phe Pro Ser  
 340 345 350  
 Val Tyr Ala Trp Glu Arg Lys Lys Ile Ser Asn Cys Val Ala Asp Tyr  
 355 360 365  
 Ser Val Leu Tyr Asn Ser Thr Phe Phe Ser Thr Phe Lys Cys Tyr Gly  
 370 375 380  
 Val Ser Ala Thr Lys Leu Asn Asp Leu Cys Phe Ser Asn Val Tyr Ala  
 385 390 395 400  
 Asp Ser Phe Val Val Lys Gly Asp Asp Val Arg Gln Ile Ala Pro Gly  
 405 410 415  
 Gln Thr Gly Val Ile Ala Asp Tyr Asn Tyr Lys Leu Pro Asp Asp Phe  
 420 425 430  
 Met Gly Cys Val Leu Ala Trp Asn Thr Arg Asn Ile Asp Ala Thr Ser  
 435 440 445

SEQLIST-20480.TXT

Thr Gly Asn Tyr Asn Tyr Lys Tyr Arg Tyr Leu Arg His Gly Lys Leu  
 450 455 460  
 Arg Pro Phe Glu Arg Asp Ile Ser Asn Val Pro Phe Ser Pro Asp Gly  
 465 470 475 480  
 Lys Pro Cys Thr Pro Pro Ala Leu Asn Cys Tyr Trp Pro Leu Asn Asp  
 485 490 495  
 Tyr Gly Phe Tyr Thr Thr Thr Gly Ile Gly Tyr Gln Pro Tyr Arg Val  
 500 505 510  
 Val Val Leu Ser Phe Glu Leu Leu Asn Ala Pro Ala Thr Val Cys Gly  
 515 520 525  
 Pro Lys Leu Ser Thr Asp Leu Ile Lys Asn Gln Cys Val Asn Phe Asn  
 530 535 540  
 Phe Asn Gly Leu Thr Gly Thr Gly Val Leu Thr Pro Ser Ser Lys Arg  
 545 550 555 560  
 Phe Gln Pro Phe Gln Gln Phe Gly Arg Asp Val Ser Asp Phe Thr Asp  
 565 570 575  
 Ser Val Arg Asp Pro Lys Thr Ser Glu Ile Leu Asp Ile Ser Pro Cys  
 580 585 590  
 Ser Phe Gly Gly Val Ser Val Ile Thr Pro Gly Thr Asn Ala Ser Ser  
 595 600 605  
 Glu Val Ala Val Leu Tyr Gln Asp Val Asn Cys Thr Asp Val Ser Thr  
 610 615 620  
 Ala Ile His Ala Asp Gln Leu Thr Pro Ala Trp Arg Ile Tyr Ser Thr  
 625 630 635 640  
 Gly Asn Asn Val Phe Gln Thr Gln Ala Gly Cys Leu Ile Gly Ala Glu  
 645 650 655  
 His Val Asp Thr Ser Tyr Glu Cys Asp Ile Pro Ile Gly Ala Gly Ile  
 660 665 670  
 Cys Ala Ser Tyr His Thr Gly Ser Lys Val Val Thr Asn Leu Thr Lys  
 675 680 685  
 Thr Val Asn Glu Asn Lys Gln Asn Val Asp Ala Lys Val Lys Ala Ala  
 690 695 700  
 Glu Ser Glu Ile Glu Lys Leu Thr Thr Lys Leu Ala Asp Thr Asp Ala  
 705 710 715 720  
 Ala Leu Ala Asp Thr Asp Ala Ala Leu Asp Ala Thr Thr Asn Ala Leu  
 725 730 735  
 Asn Lys Leu Gly Glu Asn Ile Thr Thr Phe Ala Glu Glu Thr Lys Thr  
 740 745 750  
 Asn Ile Val Lys Ile Asp Glu Lys Leu Glu Ala Val Ala Asp Thr Val  
 755 760 765  
 Asp Lys His Ala Glu Ala Phe Asn Asp Ile Ala Asp Ser Leu Asp Glu  
 770 775 780

SEQLIST-20480.TXT

Thr 785 Asn Thr Lys Ala Asp 790 Glu Ala Val Lys 795 Thr Ala Asn Glu Ala Lys 800  
 Gln Thr Ala Glu 805 Glu Thr Lys Gln Asn Val 810 Asp Ala Lys Val Lys 815 Ala  
 Ala Glu Thr Ala 820 Ala Gly Lys Ala Glu 825 Ala Ala Ala Gly Thr 830 Ala Asn  
 Thr Ala Ala 835 Asp Lys Ala Glu Ala Val Ala Ala Lys Val 845 Thr Asp Ile  
 Lys Ala 850 Asp Ile Ala Thr Asn 855 Lys Asp Asn Ile Ala 860 Lys Lys Ala Asn  
 Ser Ala Asp Val Tyr Thr 870 Arg Glu Glu Ser Asp 875 Ser Lys Phe Val Arg 880  
 Ile Asp Gly Leu Asn 885 Ala Thr Thr Glu Lys 890 Leu Asp Thr Arg Leu Ala 895  
 Ser Ala Glu Lys 900 Ser Ile Ala Asp His 905 Asp Thr Arg Leu Asn 910 Gly Leu  
 Asp Lys Thr Val 915 Ser Asp Leu Arg 920 Lys Glu Thr Arg Gln 925 Gly Leu Ala  
 Glu Gln 930 Ala Ala Leu Ser Gly 935 Leu Phe Gln Pro Tyr 940 Asn Val Gly  
 <210> 7305  
 <211> 1270  
 <212> PRT  
 <213> Fusion polypeptide (SARS coronavirus & Neisseria meningitidis)  
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 Met Lys His Phe Pro Ser Lys Val Leu Thr Thr Ala Ile Leu Ala Thr  
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 Phe Cys Ser Gly 20 Ala Leu Ala Ala Thr 25 Asn Asp Asp Asp Ser 30 Asp Leu  
 Asp Arg Cys 35 Thr Thr Phe Asp Asp 40 Val Gln Ala Pro Asn 45 Tyr Thr Gln  
 His Thr 50 Ser Ser Met Arg Gly 55 Val Tyr Tyr Pro Asp 60 Glu Ile Phe Arg  
 Ser Asp Thr Leu Tyr Leu 70 Thr Gln Asp Leu Phe 75 Leu Pro Phe Tyr Ser 80  
 Asn Val Thr Gly Phe 85 His Thr Ile Asn 90 Thr Phe Gly Asn 95 Pro Val  
 Ile Pro Phe Lys 100 Asp Gly Ile Tyr Phe 105 Ala Ala Thr Glu Lys 110 Ser Asn  
 Val Val Arg 115 Gly Trp Val Phe Gly 120 Ser Thr Met Asn 125 Asn Lys Ser Gln  
 Ser Val 130 Ile Ile Ile Asn Asn 135 Ser Thr Asn Val Val 140 Ile Arg Ala Cys



SEQLIST-20480.TXT

Asn Phe Glu Leu Cys Asp Asn Pro Phe Phe Ala Val Ser Lys Pro Met  
 145 150 155 160  
 Gly Thr Gln Thr His Thr Met Ile Phe Asp Asn Ala Phe Asn Cys Thr  
 165 170 175  
 Phe Glu Tyr Ile Ser Asp Ala Phe Ser Leu Asp Val Ser Glu Lys Ser  
 180 185 190  
 Gly Asn Phe Lys His Leu Arg Glu Phe Val Phe Lys Asn Lys Asp Gly  
 195 200 205  
 Phe Leu Tyr Val Tyr Lys Gly Tyr Gln Pro Ile Asp Val Val Arg Asp  
 210 215 220  
 Leu Pro Ser Gly Phe Asn Thr Leu Lys Pro Ile Phe Lys Leu Pro Leu  
 225 230 235 240  
 Gly Ile Asn Ile Thr Asn Phe Arg Ala Ile Leu Thr Ala Phe Ser Pro  
 245 250 255  
 Ala Gln Asp Ile Trp Gly Thr Ser Ala Ala Ala Tyr Phe Val Gly Tyr  
 260 265 270  
 Leu Lys Pro Thr Thr Phe Met Leu Lys Tyr Asp Glu Asn Gly Thr Ile  
 275 280 285  
 Thr Asp Ala Val Asp Cys Ser Gln Asn Pro Leu Ala Glu Leu Lys Cys  
 290 295 300  
 Ser Val Lys Ser Phe Glu Ile Asp Lys Gly Ile Tyr Gln Thr Ser Asn  
 305 310 315 320  
 Phe Arg Val Val Pro Ser Gly Asp Val Val Arg Phe Pro Asn Ile Thr  
 325 330 335  
 Asn Leu Cys Pro Phe Gly Glu Val Phe Asn Ala Thr Lys Phe Pro Ser  
 340 345 350  
 Val Tyr Ala Trp Glu Arg Lys Lys Ile Ser Asn Cys Val Ala Asp Tyr  
 355 360 365  
 Ser Val Leu Tyr Asn Ser Thr Phe Phe Ser Thr Phe Lys Cys Tyr Gly  
 370 375 380  
 Val Ser Ala Thr Lys Leu Asn Asp Leu Cys Phe Ser Asn Val Tyr Ala  
 385 390 395 400  
 Asp Ser Phe Val Val Lys Gly Asp Asp Val Arg Gln Ile Ala Pro Gly  
 405 410 415  
 Gln Thr Gly Val Ile Ala Asp Tyr Asn Tyr Lys Leu Pro Asp Phe  
 420 425 430  
 Met Gly Cys Val Leu Ala Trp Asn Thr Arg Asn Ile Asp Ala Thr Ser  
 435 440 445  
 Thr Gly Asn Tyr Asn Tyr Lys Tyr Arg Tyr Leu Arg His Gly Lys Leu  
 450 455 460  
 Arg Pro Phe Glu Arg Asp Ile Ser Asn Val Pro Phe Ser Pro Asp Gly  
 465 470 475 480

SEQLIST-20480.TXT

Lys Pro Cys Thr Pro 485 Pro Ala Leu Asn Cys 490 Tyr Trp Pro Leu Asn Asp 495  
 Tyr Gly Phe Tyr 500 Thr Thr Thr Gly Ile 505 Gly Tyr Gln Pro Tyr 510 Arg Val  
 Val Val Leu 515 Ser Phe Glu Leu Leu 520 Asn Ala Pro Ala Thr 525 Val Cys Gly  
 Pro Lys 530 Leu Ser Thr Asp Leu 535 Ile Lys Asn Gln Cys 540 Val Asn Phe Asn  
 Phe 545 Asn Gly Leu Thr Gly 550 Thr Gly Val Leu Thr 555 Pro Ser Ser Lys Arg 560  
 Phe Gln Pro Phe 565 Gln Gln Phe Gly Arg Asp 570 Val Ser Asp Phe Thr 575 Asp  
 Ser Val Arg Asp 580 Pro Lys Thr Ser Glu 585 Ile Leu Asp Ile Ser 590 Pro Cys  
 Ser Phe Gly 595 Gly Val Ser Val Ile 600 Thr Pro Gly Thr Asn 605 Ala Ser Ser  
 Glu Val 610 Ala Val Leu Tyr Gln 615 Asp Val Asn Cys Thr 620 Asp Val Ser Thr  
 Ala 625 Ile His Ala Asp Gln 630 Leu Thr Pro Ala Trp 635 Arg Ile Tyr Ser Thr 640  
 Gly Asn Asn Val Phe 645 Gln Thr Gln Ala Gly 650 Cys Leu Ile Gly Ala 655 Glu  
 His Val Asp Thr 660 Ser Tyr Glu Cys Asp 665 Ile Pro Ile Gly Ala 670 Gly Ile  
 Cys Ala Ser 675 Tyr His Thr Gly Ser 680 Val Ser Leu Leu Arg 685 Ser Thr Ser  
 Gln Lys 690 Ser Ile Val Ala Tyr 695 Thr Met Ser Leu Gly 700 Ala Asp Ser Ser  
 Ile 705 Ala Tyr Ser Asn Asn 710 Thr Ile Ala Ile Pro 715 Thr Asn Phe Ser Ile 720  
 Ser Ile Thr Thr Glu 725 Val Met Pro Val Ser 730 Met Ala Lys Thr Ser Val 735  
 Asp Cys Asn Met 740 Tyr Ile Cys Gly Asp 745 Ser Thr Glu Cys Ala 750 Asn Leu  
 Leu Leu Gln 755 Tyr Gly Ser Phe Cys 760 Thr Gln Leu Asn Arg 765 Ala Leu Ser  
 Gly Ile 770 Ala Ala Glu Gln Asp 775 Arg Asn Thr Arg Glu 780 Val Phe Ala Gln  
 Val 785 Lys Gln Met Tyr Lys 790 Thr Pro Thr Leu Lys 795 Tyr Phe Gly Gly Phe 800  
 Asn Phe Ser Gln Ile 805 Leu Pro Asp Pro Leu 810 Lys Pro Thr Lys Arg 815 Ser

SEQLIST-20480.TXT

Phe Ile Glu Asp Leu Leu Phe Asn Lys Val Thr Leu Ala Asp Ala Gly  
 820 825 830  
 Phe Met Lys Gln Tyr Gly Glu Cys Leu Gly Asp Ile Asn Ala Arg Asp  
 835 840 845  
 Leu Ile Cys Ala Gln Lys Phe Asn Gly Leu Thr Val Leu Pro Pro Leu  
 850 855 860  
 Leu Thr Asp Asp Met Ile Ala Ala Tyr Thr Ala Ala Leu Val Ser Gly  
 865 870 875 880  
 Thr Ala Thr Ala Gly Trp Thr Phe Gly Ala Gly Ala Ala Leu Gln Ile  
 885 890 895  
 Pro Phe Ala Met Gln Met Ala Tyr Arg Phe Asn Gly Ile Gly Val Thr  
 900 905 910  
 Gln Asn Val Leu Tyr Glu Asn Gln Lys Gln Ile Ala Asn Gln Phe Asn  
 915 920 925  
 Lys Ala Ile Ser Gln Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala  
 930 935 940  
 Leu Gly Lys Leu Gln Asp Val Val Asn Gln Asn Ala Gln Ala Leu Asn  
 945 950 955 960  
 Thr Leu Val Lys Gln Leu Ser Ser Asn Phe Gly Ala Ile Ser Ser Val  
 965 970 975  
 Leu Asn Asp Ile Leu Ser Arg Leu Asp Lys Val Glu Ala Glu Val Gln  
 980 985 990  
 Ile Asp Arg Leu Ile Thr Gly Arg Leu Gln Ser Leu Gln Thr Tyr Val  
 995 1000 1005  
 Thr Gln Gln Leu Ile Arg Ala Ala Glu Ile Arg Ala Ser Ala Asn Leu  
 1010 1015 1020  
 Ala Ala Thr Lys Met Ser Glu Cys Val Leu Gly Gln Ser Lys Arg Val  
 1025 1030 1035 1040  
 Asp Phe Cys Gly Lys Gly Tyr His Leu Met Ser Phe Pro Gln Ala Ala  
 1045 1050 1055  
 Pro His Gly Val Val Phe Leu His Val Thr Tyr Val Pro Ser Gln Glu  
 1060 1065 1070  
 Arg Asn Phe Thr Thr Ala Pro Ala Ile Cys His Glu Gly Lys Ala Tyr  
 1075 1080 1085  
 Phe Pro Arg Glu Gly Val Phe Val Phe Asn Gly Thr Ser Trp Phe Ile  
 1090 1095 1100  
 Thr Gln Arg Asn Phe Phe Ser Pro Gln Ile Ile Thr Thr Asp Asn Thr  
 1105 1110 1115 1120  
 Phe Val Ser Gly Asn Cys Asp Val Val Ile Gly Ile Ile Asn Asn Thr  
 1125 1130 1135  
 Val Tyr Asp Pro Leu Gln Pro Glu Leu Asp Ser Phe Lys Glu Glu Leu  
 1140 1145 1150

SEQLIST-20480.TXT

Asp Lys Tyr Phe Lys Asn His Thr Ser Pro Asp Val Asp Phe Gly Asp  
1155 1160 1165

Ile Ser Gly Ile Asn Ala Ser Val Val Asn Ile Gln Lys Glu Ile Asp  
1170 1175 1180

Arg Leu Asn Glu Val Ala Lys Asn Leu Asn Glu Ser Leu Ile Asp Leu  
1185 1190 1195 1200

Gln Glu Leu Gly Lys Tyr Glu Gln Tyr Ile Lys Trp Pro Lys Leu Arg  
1205 1210 1215

Phe Asn Val Thr Ala Ala Val Gly Gly Tyr Lys Ser Glu Ser Ala Val  
1220 1225 1230

Ala Ile Gly Thr Gly Phe Arg Phe Thr Glu Asn Phe Ala Ala Lys Ala  
1235 1240 1245

Gly Val Ala Val Gly Thr Ser Ser Gly Ser Ser Ala Ala Tyr His Val  
1250 1255 1260

Gly Val Asn Tyr Glu Trp  
1265 1270

<210> 7306  
<211> 1213  
<212> PRT  
<213> Fusion polypeptide (SARS coronavirus & Neisseria meningitidis)

<400> 7306  
Met Lys His Phe Pro Ser Lys Val Leu Thr Thr Ala Ile Leu Ala Thr  
1 5 10 15

Phe Cys Ser Gly Ala Leu Ala Ala Thr Asn Asp Asp Asp Ser Asp Leu  
20 25 30

Asp Arg Cys Thr Thr Phe Asp Asp Val Gln Ala Pro Asn Tyr Thr Gln  
35 40 45

His Thr Ser Ser Met Arg Gly Val Tyr Tyr Pro Asp Glu Ile Phe Arg  
50 55 60

Ser Asp Thr Leu Tyr Leu Thr Gln Asp Leu Phe Leu Pro Phe Tyr Ser  
65 70 75 80

Asn Val Thr Gly Phe His Thr Ile Asn His Thr Phe Gly Asn Pro Val  
85 90 95

Ile Pro Phe Lys Asp Gly Ile Tyr Phe Ala Ala Thr Glu Lys Ser Asn  
100 105 110

Val Val Arg Gly Trp Val Phe Gly Ser Thr Met Asn Asn Lys Ser Gln  
115 120 125

Ser Val Ile Ile Ile Asn Asn Ser Thr Asn Val Val Ile Arg Ala Cys  
130 135 140

Asn Phe Glu Leu Cys Asp Asn Pro Phe Phe Ala Val Ser Lys Pro Met  
145 150 155 160

Gly Thr Gln Thr His Thr Met Ile Phe Asp Asn Ala Phe Asn Cys Thr  
165 170 175

SEQLIST-20480.TXT

Phe Glu Tyr Ile Ser Asp Ala Phe Ser Leu Asp Val Ser Glu Lys Ser  
 180 185 190  
 Gly Asn Phe Lys His Leu Arg Glu Phe Val Phe Lys Asn Lys Asp Gly  
 195 200 205  
 Phe Leu Tyr Val Tyr Lys Gly Tyr Gln Pro Ile Asp Val Val Arg Asp  
 210 215 220  
 Leu Pro Ser Gly Phe Asn Thr Leu Lys Pro Ile Phe Lys Leu Pro Leu  
 225 230 235 240  
 Gly Ile Asn Ile Thr Asn Phe Arg Ala Ile Leu Thr Ala Phe Ser Pro  
 245 250 255  
 Ala Gln Asp Ile Trp Gly Thr Ser Ala Ala Ala Tyr Phe Val Gly Tyr  
 260 265 270  
 Leu Lys Pro Thr Thr Phe Met Leu Lys Tyr Asp Glu Asn Gly Thr Ile  
 275 280 285  
 Thr Asp Ala Val Asp Cys Ser Gln Asn Pro Leu Ala Glu Leu Lys Cys  
 290 295 300  
 Ser Val Lys Ser Phe Glu Ile Asp Lys Gly Ile Tyr Gln Thr Ser Asn  
 305 310 315 320  
 Phe Arg Val Val Pro Ser Gly Asp Val Val Arg Phe Pro Asn Ile Thr  
 325 330 335  
 Asn Leu Cys Pro Phe Gly Glu Val Phe Asn Ala Thr Lys Phe Pro Ser  
 340 345 350  
 Val Tyr Ala Trp Glu Arg Lys Lys Ile Ser Asn Cys Val Ala Asp Tyr  
 355 360 365  
 Ser Val Leu Tyr Asn Ser Thr Phe Phe Ser Thr Phe Lys Cys Tyr Gly  
 370 375 380  
 Val Ser Ala Thr Lys Leu Asn Asp Leu Cys Phe Ser Asn Val Tyr Ala  
 385 390 395 400  
 Asp Ser Phe Val Val Lys Gly Asp Asp Val Arg Gln Ile Ala Pro Gly  
 405 410 415  
 Gln Thr Gly Val Ile Ala Asp Tyr Asn Tyr Lys Leu Pro Asp Asp Phe  
 420 425 430  
 Met Gly Cys Val Leu Ala Trp Asn Thr Arg Asn Ile Asp Ala Thr Ser  
 435 440 445  
 Thr Gly Asn Tyr Asn Tyr Lys Tyr Arg Tyr Leu Arg His Gly Lys Leu  
 450 455 460  
 Arg Pro Phe Glu Arg Asp Ile Ser Asn Val Pro Phe Ser Pro Asp Gly  
 465 470 475 480  
 Lys Pro Cys Thr Pro Pro Ala Leu Asn Cys Tyr Trp Pro Leu Asn Asp  
 485 490 495  
 Tyr Gly Phe Tyr Thr Thr Thr Gly Ile Gly Tyr Gln Pro Tyr Arg Val  
 500 505 510

SEQLIST-20480.TXT

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Val | Leu | Ser | Phe | Glu | Leu | Leu | Asn | Ala | Pro | Ala | Thr | Val | Cys | Gly |
|     |     | 515 |     |     |     |     | 520 |     |     |     |     | 525 |     |     |     |
| Pro | Lys | Leu | Ser | Thr | Asp | Leu | Ile | Lys | Asn | Gln | Cys | Val | Asn | Phe | Asn |
|     | 530 |     |     |     |     | 535 |     |     |     |     | 540 |     |     |     |     |
| Phe | Asn | Gly | Leu | Thr | Gly | Thr | Gly | Val | Leu | Thr | Pro | Ser | Ser | Lys | Arg |
| 545 |     |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     | 560 |
| Phe | Gln | Pro | Phe | Gln | Gln | Phe | Gly | Arg | Asp | Val | Ser | Asp | Phe | Thr | Asp |
|     |     |     |     | 565 |     |     |     |     | 570 |     |     |     |     | 575 |     |
| Ser | Val | Arg | Asp | Pro | Lys | Thr | Ser | Glu | Ile | Leu | Asp | Ile | Ser | Pro | Cys |
|     |     |     | 580 |     |     |     |     | 585 |     |     |     |     | 590 |     |     |
| Ser | Phe | Gly | Gly | Val | Ser | Val | Ile | Thr | Pro | Gly | Thr | Asn | Ala | Ser | Ser |
|     |     | 595 |     |     |     |     | 600 |     |     |     |     | 605 |     |     |     |
| Glu | Val | Ala | Val | Leu | Tyr | Gln | Asp | Val | Asn | Cys | Thr | Asp | Val | Ser | Thr |
|     | 610 |     |     |     |     | 615 |     |     |     |     | 620 |     |     |     |     |
| Ala | Ile | His | Ala | Asp | Gln | Leu | Thr | Pro | Ala | Trp | Arg | Ile | Tyr | Ser | Thr |
| 625 |     |     |     |     | 630 |     |     |     |     | 635 |     |     |     |     | 640 |
| Gly | Asn | Asn | Val | Phe | Gln | Thr | Gln | Ala | Gly | Cys | Leu | Ile | Gly | Ala | Glu |
|     |     |     |     | 645 |     |     |     |     | 650 |     |     |     |     | 655 |     |
| His | Val | Asp | Thr | Ser | Tyr | Glu | Cys | Asp | Ile | Pro | Ile | Gly | Ala | Gly | Ile |
|     |     |     | 660 |     |     |     |     | 665 |     |     |     |     | 670 |     |     |
| Cys | Ala | Ser | Tyr | His | Thr | Gly | Ser | Val | Ser | Leu | Leu | Arg | Ser | Thr | Ser |
|     |     | 675 |     |     |     |     | 680 |     |     |     |     | 685 |     |     |     |
| Gln | Lys | Ser | Ile | Val | Ala | Tyr | Thr | Met | Ser | Leu | Gly | Ala | Asp | Ser | Ser |
|     | 690 |     |     |     |     | 695 |     |     |     |     | 700 |     |     |     |     |
| Ile | Ala | Tyr | Ser | Asn | Asn | Thr | Ile | Ala | Ile | Pro | Thr | Asn | Phe | Ser | Ile |
| 705 |     |     |     |     | 710 |     |     |     |     | 715 |     |     |     |     | 720 |
| Ser | Ile | Thr | Thr | Glu | Val | Met | Pro | Val | Ser | Met | Ala | Lys | Thr | Ser | Val |
|     |     |     |     | 725 |     |     |     |     | 730 |     |     |     | 735 |     |     |
| Asp | Cys | Asn | Met | Tyr | Ile | Cys | Gly | Asp | Ser | Thr | Glu | Cys | Ala | Asn | Leu |
|     |     |     | 740 |     |     |     |     | 745 |     |     |     |     | 750 |     |     |
| Leu | Leu | Gln | Tyr | Gly | Ser | Phe | Cys | Thr | Gln | Leu | Asn | Arg | Ala | Leu | Ser |
|     |     | 755 |     |     |     |     | 760 |     |     |     |     | 765 |     |     |     |
| Gly | Ile | Ala | Ala | Glu | Gln | Asp | Arg | Asn | Thr | Arg | Glu | Val | Phe | Ala | Gln |
|     | 770 |     |     |     |     | 775 |     |     |     |     | 780 |     |     |     |     |
| Val | Lys | Gln | Met | Tyr | Lys | Thr | Pro | Thr | Leu | Lys | Tyr | Phe | Gly | Gly | Phe |
| 785 |     |     |     |     | 790 |     |     |     |     | 795 |     |     |     |     | 800 |
| Asn | Phe | Ser | Gln | Ile | Leu | Pro | Asp | Pro | Leu | Lys | Pro | Thr | Lys | Arg | Ser |
|     |     |     |     | 805 |     |     |     |     | 810 |     |     |     |     | 815 |     |
| Phe | Ile | Glu | Asp | Leu | Leu | Phe | Asn | Lys | Val | Thr | Leu | Ala | Asp | Ala | Gly |
|     |     |     | 820 |     |     |     |     | 825 |     |     |     |     | 830 |     |     |
| Phe | Met | Lys | Gln | Tyr | Gly | Glu | Cys | Leu | Gly | Asp | Ile | Asn | Ala | Arg | Asp |
|     |     | 835 |     |     |     |     | 840 |     |     |     |     | 845 |     |     |     |

SEQLIST-20480.TXT

Leu Ile Cys Ala Gln Lys Phe Asn Gly Leu Thr Val Leu Pro Pro Leu  
 850 855 860  
 Leu Thr Asp Asp Met Ile Ala Ala Tyr Thr Ala Ala Leu Val Ser Gly  
 865 870 875 880  
 Thr Ala Thr Ala Gly Trp Thr Phe Gly Ala Gly Ala Ala Leu Gln Ile  
 885 890 895  
 Pro Phe Ala Met Gln Met Ala Tyr Arg Phe Asn Gly Ile Gly Val Thr  
 900 905 910  
 Gln Asn Val Leu Tyr Glu Asn Gln Lys Gln Ile Ala Asn Gln Phe Asn  
 915 920 925  
 Lys Ala Ile Ser Gln Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala  
 930 935 940  
 Leu Gly Lys Leu Gln Asp Val Val Asn Gln Asn Ala Gln Ala Leu Asn  
 945 950 955 960  
 Thr Leu Val Lys Gln Leu Ser Ser Asn Phe Gly Ala Ile Ser Ser Val  
 965 970 975  
 Leu Asn Asp Ile Leu Ser Arg Leu Asp Lys Val Glu Ala Glu Val Gln  
 980 985 990  
 Ile Asp Arg Leu Ile Thr Gly Arg Leu Gln Ser Leu Gln Thr Tyr Val  
 995 1000 1005  
 Thr Gln Gln Leu Ile Arg Ala Ala Glu Ile Arg Ala Ser Ala Asn Leu  
 1010 1015 1020  
 Ala Ala Thr Lys Met Ser Glu Cys Val Leu Gly Gln Ser Lys Arg Val  
 1025 1030 1035 1040  
 Asp Phe Cys Gly Lys Gly Tyr His Leu Met Ser Phe Pro Gln Ala Ala  
 1045 1050 1055  
 Pro His Gly Val Val Phe Leu His Val Thr Tyr Val Pro Ser Gln Glu  
 1060 1065 1070  
 Arg Asn Phe Thr Thr Ala Pro Ala Ile Cys His Glu Gly Lys Ala Tyr  
 1075 1080 1085  
 Phe Pro Arg Glu Gly Val Phe Val Phe Asn Gly Thr Ser Trp Phe Ile  
 1090 1095 1100  
 Thr Gln Arg Asn Phe Phe Ser Pro Gln Ile Ile Thr Thr Asp Asn Thr  
 1105 1110 1115 1120  
 Phe Val Ser Gly Asn Cys Asp Val Val Ile Gly Ile Ile Asn Asn Thr  
 1125 1130 1135  
 Val Tyr Asp Pro Leu Gln Pro Glu Leu Asp Ser Phe Lys Glu Glu Leu  
 1140 1145 1150  
 Asp Lys Tyr Phe Lys Asn His Thr Ser Pro Asp Val Asp Phe Gly Asp  
 1155 1160 1165  
 Ile Ser Gly Ile Asn Ala Ser Val Val Asn Ile Gln Lys Glu Ile Asp  
 1170 1175 1180

SEQLIST-20480.TXT

Arg Leu Asn Glu Val Ala Lys Asn Leu Asn Glu Ser Leu Ile Asp Leu  
1185 1190 1195 1200

Gln Glu Leu Gly Lys Tyr Glu Gln Tyr Ile Lys Trp Pro  
1205 1210

<210> 7307  
<211> 649  
<212> PRT  
<213> SARS coronavirus

<400> 7307  
Ser Asp Leu Asp Arg Cys Thr Thr Phe Asp Asp Val Gln Ala Pro Asn  
1 5 10 15

Tyr Thr Gln His Thr Ser Ser Met Arg Gly Val Tyr Tyr Pro Asp Glu  
20 25 30

Ile Phe Arg Ser Asp Thr Leu Tyr Leu Thr Gln Asp Leu Phe Leu Pro  
35 40 45

Phe Tyr Ser Asn Val Thr Gly Phe His Thr Ile Asn His Thr Phe Gly  
50 55 60

Asn Pro Val Ile Pro Phe Lys Asp Gly Ile Tyr Phe Ala Ala Thr Glu  
65 70 75 80

Lys Ser Asn Val Val Arg Gly Trp Val Phe Gly Ser Thr Met Asn Asn  
85 90 95

Lys Ser Gln Ser Val Ile Ile Ile Asn Asn Ser Thr Asn Val Val Ile  
100 105 110

Arg Ala Cys Asn Phe Glu Leu Cys Asp Asn Pro Phe Phe Ala Val Ser  
115 120 125

Lys Pro Met Gly Thr Gln Thr His Thr Met Ile Phe Asp Asn Ala Phe  
130 135 140

Asn Cys Thr Phe Glu Tyr Ile Ser Asp Ala Phe Ser Leu Asp Val Ser  
145 150 155 160

Glu Lys Ser Gly Asn Phe Lys His Leu Arg Glu Phe Val Phe Lys Asn  
165 170 175

Lys Asp Gly Phe Leu Tyr Val Tyr Lys Gly Tyr Gln Pro Ile Asp Val  
180 185 190

Val Arg Asp Leu Pro Ser Gly Phe Asn Thr Leu Lys Pro Ile Phe Lys  
195 200 205

Leu Pro Leu Gly Ile Asn Ile Thr Asn Phe Arg Ala Ile Leu Thr Ala  
210 215 220

Phe Ser Pro Ala Gln Asp Ile Trp Gly Thr Ser Ala Ala Ala Tyr Phe  
225 230 235 240

Val Gly Tyr Leu Lys Pro Thr Thr Phe Met Leu Lys Tyr Asp Glu Asn  
245 250 255

Gly Thr Ile Thr Asp Ala Val Asp Cys Ser Gln Asn Pro Leu Ala Glu  
260 265 270



SEQLIST-20480.TXT

Leu Lys Cys Ser Val Lys Ser Phe Glu Ile Asp Lys Gly Ile Tyr Gln  
275 280 285  
Thr Ser Asn Phe Arg Val Val Pro Ser Gly Asp Val Val Arg Phe Pro  
290 295 300  
Asn Ile Thr Asn Leu Cys Pro Phe Gly Glu Val Phe Asn Ala Thr Lys  
305 310 315 320  
Phe Pro Ser Val Tyr Ala Trp Glu Arg Lys Lys Ile Ser Asn Cys Val  
325 330 335  
Ala Asp Tyr Ser Val Leu Tyr Asn Ser Thr Phe Phe Ser Thr Phe Lys  
340 345 350  
Cys Tyr Gly Val Ser Ala Thr Lys Leu Asn Asp Leu Cys Phe Ser Asn  
355 360 365  
Val Tyr Ala Asp Ser Phe Val Val Lys Gly Asp Asp Val Arg Gln Ile  
370 375 380  
Ala Pro Gly Gln Thr Gly Val Ile Ala Asp Tyr Asn Tyr Lys Leu Pro  
385 390 395 400  
Asp Asp Phe Met Gly Cys Val Leu Ala Trp Asn Thr Arg Asn Ile Asp  
405 410 415  
Ala Thr Ser Thr Gly Asn Tyr Asn Tyr Lys Tyr Arg Tyr Leu Arg His  
420 425 430  
Gly Lys Leu Arg Pro Phe Glu Arg Asp Ile Ser Asn Val Pro Phe Ser  
435 440 445  
Pro Asp Gly Lys Pro Cys Thr Pro Pro Ala Leu Asn Cys Tyr Trp Pro  
450 455 460  
Leu Asn Asp Tyr Gly Phe Tyr Thr Thr Thr Gly Ile Gly Tyr Gln Pro  
465 470 475 480  
Tyr Arg Val Val Val Leu Ser Phe Glu Leu Leu Asn Ala Pro Ala Thr  
485 490 495  
Val Cys Gly Pro Lys Leu Ser Thr Asp Leu Ile Lys Asn Gln Cys Val  
500 505 510  
Asn Phe Asn Phe Asn Gly Leu Thr Gly Thr Gly Val Leu Thr Pro Ser  
515 520 525  
Ser Lys Arg Phe Gln Pro Phe Gln Gln Phe Gly Arg Asp Val Ser Asp  
530 535 540  
Phe Thr Asp Ser Val Arg Asp Pro Lys Thr Ser Glu Ile Leu Asp Ile  
545 550 555 560  
Ser Pro Cys Ala Phe Gly Gly Val Ser Val Ile Thr Pro Gly Thr Asn  
565 570 575  
Ala Ser Ser Glu Val Ala Val Leu Tyr Gln Asp Val Asn Cys Thr Asp  
580 585 590  
Val Ser Thr Ala Ile His Ala Asp Gln Leu Thr Pro Ala Trp Arg Ile  
595 600 605

SEQLIST-20480.TXT

Tyr Ser Thr Gly Asn Asn Val Phe Gln Thr Gln Ala Gly Cys Leu Ile  
610 615 620

Gly Ala Glu His Val Asp Thr Ser Tyr Glu Cys Asp Ile Pro Ile Gly  
625 630 635 640

Ala Gly Ile Cys Ala Ser Tyr His Thr  
645

<210> 7308  
<211> 533  
<212> PRT  
<213> SARS coronavirus

<400> 7308  
Val Ser Leu Leu Arg Ser Thr Ser Gln Lys Ser Ile Val Ala Tyr Thr  
1 5 10 15

Met Ser Leu Gly Ala Asp Ser Ser Ile Ala Tyr Ser Asn Asn Thr Ile  
20 25 30

Ala Ile Pro Thr Asn Phe Ser Ile Ser Ile Thr Thr Glu Val Met Pro  
35 40 45

Val Ser Met Ala Lys Thr Ser Val Asp Cys Asn Met Tyr Ile Cys Gly  
50 55 60

Asp Ser Thr Glu Cys Ala Asn Leu Leu Leu Gln Tyr Gly Ser Phe Cys  
65 70 75 80

Thr Gln Leu Asn Arg Ala Leu Ser Gly Ile Ala Ala Glu Gln Asp Arg  
85 90 95

Asn Thr Arg Glu Val Phe Ala Gln Val Lys Gln Met Tyr Lys Thr Pro  
100 105 110

Thr Leu Lys Tyr Phe Gly Gly Phe Asn Phe Ser Gln Ile Leu Pro Asp  
115 120 125

Pro Leu Lys Pro Thr Lys Arg Ser Phe Ile Glu Asp Leu Leu Phe Asn  
130 135 140

Lys Val Thr Leu Ala Asp Ala Gly Phe Met Lys Gln Tyr Gly Glu Cys  
145 150 155 160

Leu Gly Asp Ile Asn Ala Arg Asp Leu Ile Cys Ala Gln Lys Phe Asn  
165 170 175

Gly Leu Thr Val Leu Pro Pro Leu Leu Thr Asp Asp Met Ile Ala Ala  
180 185 190

Tyr Thr Ala Ala Leu Val Ser Gly Thr Ala Thr Ala Gly Trp Thr Phe  
195 200 205

Gly Ala Gly Ala Ala Leu Gln Ile Pro Phe Ala Met Gln Met Ala Tyr  
210 215 220

Arg Phe Asn Gly Ile Gly Val Thr Gln Asn Val Leu Tyr Glu Asn Gln  
225 230 235 240

Lys Gln Ile Ala Asn Gln Phe Asn Lys Ala Ile Ser Gln Ile Gln Glu  
245 250 255

SEQLIST-20480.TXT

Ser Leu Thr Thr Thr Ser Thr Ala Leu Gly Lys Leu Gln Asp Val Val  
260 265 270  
Asn Gln Asn Ala Gln Ala Leu Asn Thr Leu Val Lys Gln Leu Ser Ser  
275 280 285  
Asn Phe Gly Ala Ile Ser Ser Val Leu Asn Asp Ile Leu Ser Arg Leu  
290 295 300  
Asp Lys Val Glu Ala Glu Val Gln Ile Asp Arg Leu Ile Thr Gly Arg  
305 310 315 320  
Leu Gln Ser Leu Gln Thr Tyr Val Thr Gln Gln Leu Ile Arg Ala Ala  
325 330 335  
Glu Ile Arg Ala Ser Ala Asn Leu Ala Ala Thr Lys Met Ser Glu Cys  
340 345 350  
Val Leu Gly Gln Ser Lys Arg Val Asp Phe Cys Gly Lys Gly Tyr His  
355 360 365  
Leu Met Ser Phe Pro Gln Ala Ala Pro His Gly Val Val Phe Leu His  
370 375 380  
Val Thr Tyr Val Pro Ser Gln Glu Arg Asn Phe Thr Thr Ala Pro Ala  
385 390 395 400  
Ile Cys His Glu Gly Lys Ala Tyr Phe Pro Arg Glu Gly Val Phe Val  
405 410 415  
Phe Asn Gly Thr Ser Trp Phe Ile Thr Gln Arg Asn Phe Phe Ser Pro  
420 425 430  
Gln Ile Ile Thr Thr Asp Asn Thr Phe Val Ser Gly Asn Cys Asp Val  
435 440 445  
Val Ile Gly Ile Ile Asn Asn Thr Val Tyr Asp Pro Leu Gln Pro Glu  
450 455 460  
Leu Asp Ser Phe Lys Glu Glu Leu Asp Lys Tyr Phe Lys Asn His Thr  
465 470 475 480  
Ser Pro Asp Val Asp Leu Gly Asp Ile Ser Gly Ile Asn Ala Ser Val  
485 490 495  
Val Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn Glu Val Ala Lys Asn  
500 505 510  
Leu Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu Gly Lys Tyr Glu Gln  
515 520 525  
Tyr Ile Lys Trp Pro  
530

<210> 7309  
<211> 364  
<212> PRT  
<213> Neisseria meningitidis

<400> 7309  
Met Ser Met Lys His Phe Pro Ser Lys Val Leu Thr Thr Ala Ile Leu  
1 5 10 15

SEQLIST-20480.TXT

Ala Thr Phe Cys Ser Gly Ala Leu Ala Ala Thr Ser Asp Asp Val  
20 25 30  
Lys Lys Ala Ala Thr Val Ala Ile Val Ala Ala Tyr Asn Asn Gly Gln  
35 40 45  
Glu Ile Asn Gly Phe Lys Ala Gly Glu Thr Ile Tyr Asp Ile Gly Glu  
50 55 60  
Asp Gly Thr Ile Thr Gln Lys Asp Ala Thr Ala Ala Asp Val Glu Ala  
65 70 75 80  
Asp Asp Phe Lys Gly Leu Gly Leu Lys Lys Val Val Thr Asn Leu Thr  
85 90 95  
Lys Thr Val Asn Glu Asn Lys Gln Asn Val Asp Ala Lys Val Lys Ala  
100 105 110  
Ala Glu Ser Glu Ile Glu Lys Leu Thr Thr Lys Leu Ala Asp Thr Asp  
115 120 125  
Ala Ala Leu Ala Asp Thr Asp Ala Ala Leu Asp Glu Thr Thr Asn Ala  
130 135 140  
Leu Asn Lys Leu Gly Glu Asn Ile Thr Thr Phe Ala Glu Glu Thr Lys  
145 150 155 160  
Thr Asn Ile Val Lys Ile Asp Glu Lys Leu Glu Ala Val Ala Asp Thr  
165 170 175  
Val Asp Lys His Ala Glu Ala Phe Asn Asp Ile Ala Asp Ser Leu Asp  
180 185 190  
Glu Thr Asn Thr Lys Ala Asp Glu Ala Val Lys Thr Ala Asn Glu Ala  
195 200 205  
Lys Gln Thr Ala Glu Glu Thr Lys Gln Asn Val Asp Ala Lys Val Lys  
210 215 220  
Ala Ala Glu Thr Ala Ala Gly Lys Ala Glu Ala Ala Ala Gly Thr Ala  
225 230 235 240  
Asn Thr Ala Ala Asp Lys Ala Glu Ala Val Ala Ala Lys Val Thr Asp  
245 250 255  
Ile Lys Ala Asp Ile Ala Thr Asn Lys Ala Asp Ile Ala Lys Asn Ser  
260 265 270  
Ala Arg Ile Asp Ser Leu Asp Lys Asn Val Ala Asn Leu Arg Lys Glu  
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Thr Arg Gln Gly Leu Ala Glu Gln Ala Ala Leu Ser Gly Leu Phe Gln  
290 295 300  
Pro Tyr Asn Val Gly Arg Phe Asn Val Thr Ala Ala Val Gly Gly Tyr  
305 310 315 320  
Lys Ser Glu Ser Ala Val Ala Ile Gly Thr Gly Phe Arg Phe Thr Glu  
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35 40 45

Asp Glu Thr Thr Asn Ala Leu Asn Lys Leu Gly Glu Asn Ile Thr Thr  
50 55 60

Phe Ala Glu Glu Thr Lys Thr Asn Ile Val Lys Ile Asp Glu Lys Leu  
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Glu Ala Val Ala Asp Thr Val Asp Lys His Ala Glu Ala Phe Asn Asp  
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Ile Ala Asp Ser Leu Asp Glu Thr Asn Thr Lys Ala Asp Glu Ala Val  
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Lys Thr Ala Asn Glu Ala Lys Gln Thr Ala Glu Glu Thr Lys Gln Asn  
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130 135 140  
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180 185 190  
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195 200 205  
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Ala Ala Val Gly Gly Tyr Lys Ser Glu Ser Ala Val Ala Ile Gly Thr  
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Phe Ala Glu Glu Thr Lys Thr Asn Ile Val Lys Ile Asp Glu Lys Leu  
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Glu Ala Val Ala Asp Thr Val Asp Lys His Ala Glu Ala Phe Asn Asp  
85 90 95  
Ile Ala Asp Ser Leu Asp Glu Thr Asn Thr Lys Ala Asp Glu Ala Val  
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Lys Thr Ala Asn Glu Ala Lys Gln Thr Ala Glu Glu Thr Lys Gln Asn  
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 Glu Ser Ala Val Ala Ile Gly Thr Gly Phe Arg Phe Thr Glu Asn Phe  
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